ARCHIVES OF OPHTHALMOLOGY.

AMAUROSIS FROM FILIX MAS.

By Dr. STUELP, of Muelheim.

Translated from the German Edition, Vol. LI., 2, p. 190, December, 1904, by Dr. Matthias Lanckton Foster.

In the cases of filix-mas amaurosis, published before 1902, either no account of the condition of the fundus is given, or the ophthalmoscopic examination was made weeks or months after the onset of blindness, and the condition is stated to be one of simple or perineuritic atrophy of the optic nerve with small retinal vessels. Such observations are useless in a critical study of the action of filix mas on the eye, for they give no information regarding the immediate changes produced in the fundus by the poison. Even the results hitherto obtained from the microscopical examination of the eyes of animals which have been poisoned and blinded by filix mas do not suffice to determine on what part of the visual apparatus the poison primarily acts. In some cases the results were negative, in others there were only degenerative changes in the ganglion cells and inner granular layer of the retina. Nuel observed with early changes of the ganglion cells of the retina softening and proliferation of the neuroglia and rapid atrophy of the optic fibres with marked interstitial and perivascular œdema, as well as endo- and peri-vasculitis with obliteration of the vessels, which he took to be secondary appearances. Masius and Mahaim, on the contrary, considered the marked vascular changes to be the cause of the blindness. Okamoto found in the optic nerve swelling of the medullary sheaths, atrophy of the axis-cylinders, and hyperplasia of the interstitial tissue. These conditions are too diverse and indefinite.

They are not caused directly by the poison, but are rather sequelæ. In Okamoto's experiments on dogs, the optic nerve was removed and examined in one case thirty-nine days after blindness had been produced, in another after the lapse of four years. The views of the authors also vary as regards how the poison produces the sudden and permanent blindness, *i. e.*, on what part of the tissue the poison primarily acts, though they all agree that the amaurosis is of peripheral origin. Sidler-Huguenin believes the primary action of the drug to be an irritation of the sympathetic, which produces a spasm of the retinal arteries. But this does not seem to him a satisfactory explanation of the blindness, because such an irritation can be of only short duration, as the drug is rapidly eliminated from the body. Therefore he thinks that the poison produces great circulatory disturbance and changes in the walls of the vessels in the region of the peripheral optic paths of conduction by which the function of the nervous elements is destroyed. Uhthoff, on the contrary, thinks there is first a direct action of the poison on the nervous elements of the optic nerve and retina, and, secondly, an interference with the circulation and the vascular anomalies. In his article on toxic neuritis, he says it is an ischæmic necrosis and direct toxic action on the nerve substance. Nuel takes the true cause of the blindness to be a primary, retrobulbar, parenchymatous optic neuritis. Okamoto refers it to the changes he found in the optic nerve which, as has been mentioned, can only be sequelæ.

The opportunity to make an early ophthalmoscopic examination in a case of this nature presented itself in the following, and the picture seen has not hitherto been described. The clinical history is given at considerable length because the course of the poisoning was characteristic.

A man, thirty-four years of age, of medium strength, not presenting any of the anæmia characteristic of ankylostomiasis, had already been subjected to this treatment in June and in November, 1903, without obtaining any definite result. In the evening of January 2, 1904, he took 0.3 calomel, and at 8 A.M. next day 4.0*gm* of the ethereal extract of filix mas. As this did not

produce the desired effect, 8.0*gm* of the same extract was administered on the following morning, Jan. 4th, at 8 o'clock. Even then he complained of nothing in particular, went out in the afternoon and returned about 7 P.M. apparently well, but, contrary to his usual custom, immediately went to bed. From this point his memory is a blank. He has no recollection of what took place that night and the following day, and cannot even remember that the nurse brought him his supper, and that he ate it sitting on the side of his bed. The nurse noticed that he was stupid and apparently could not see well, but as she thought him affected by the drug she did not anticipate anything wrong. Soon after eating he went to sleep. His room-mate noticed that he became more and more restless, and called the nurse when he rose from his bed in great excitement at 3 A.M. She saw him groping and reeling about the dimly lighted room and thought him totally blind. She put him back to bed, where he soon fell into a deep coma which lasted till late in the afternoon in spite of the application of excitants and of the washing out of his bowels. Consciousness returned gradually in the evening, but was not perfectly regained until the next morning, Jan. 6th. During this entire time he had complete anuria and retention of fæces. The first urine spontaneously passed contained neither albumin nor sugar.

I saw this patient about midday, Jan. 5th, twenty-eight hours after the ingestion of the drug and about twelve hours after the onset of the blindness. Toxic symptoms usually appear about twelve hours after the administration of the drug and last about twenty-four hours, while the visual disturbances usually appear soon after the stupidity. So if we reckon in this case in which there was total blindness at 3 A. M., that this appeared four hours before, the ophthalmoscopic examination was made about twelve hours after the commencement of the amaurosis. At this time the patient was in a state of collapse. Both pupils were dilated almost to the maximum and fixed. A white reflex was visible from them in the daylight, similar to that seen in glioma. The fundus of the right eye was covered with a colossal, snow-white œdema. The optic disc and macula could not be seen. The retinal vessels were visible only in parts here and there. The visible portions of the arteries were thread-like, the scarcely recognizable blood columns broken into little pieces. The visible portions of the veins were very tortuous and

filled with broad, very dark blood columns. The picture in the left eye was similar except that the œdema was less marked and the blood columns in the visible portions of the arteries were unbroken.

In the evening of the same day, the patient had recovered his senses sufficiently to notice his blindness. The retinal œdema had somewhat diminished so that larger portions of the blood-vessels were visible. In the right eye, the minute blood columns in the portions of the arteries which could be seen had become unbroken; in the left eye, the arteries were plainly better filled, so that some hope was entertained that this eye might recover to some extent, but no trace of vision was regained in spite of immediate inhalations of amyl nitrite and later injections of strychnine.

During the following days, the retinal œdema gradually subsided, the vessels became better filled, and the optic discs came indistinctly into view. Large and small hemorrhages also became visible in the still very white fundus.

On Feb. 5, 1904, both pupils were still moderately dilated without reaction to light or convergence. In the right eye, the optic disc had an indistinct margin and was white, the retina was sprinkled with white to the periphery of the fundus, including the macula; the fovea was visible as a triangular, grayish-red spot with indistinct margins. The arteries could be seen only here and there as yellowish-white cords; the veins were much diminished in size and sheathed in white. There were several large hemorrhages in the region of the macula and numerous small ones in the periphery of the retina. The conditions in the left eye were similar to those in the right, but less marked. There was absolute amaurosis of each eye.

Three other cases of filix-mas amaurosis in which early observations could be made have been reported. Haberkamp found, in one, grayish-red papillæ and venous stasis fourteen hours after the ingestion of the drug. Nieden, who saw this case about three weeks later, found white optic nerves. In another case, which Haberkamp saw thirty-eight hours after the administration of the drug, approximately twenty-two hours after the onset of the blindness, a slight cloudiness of the papilla and marked venous stasis were observed. Nieden found in a third case, twelve hours

after rousing from coma, probably thirty-six hours after the commencement of the amaurosis, a general haziness of the retina, especially in the region of the macula.

The ophthalmoscopic appearances in these four cases were then cloudiness or grayish-red discoloration of the papilla, with stasis in the retinal veins, haziness of the retina, and, in our case, an enormous retinal œdema, with marked vascular changes, resembling the so-called embolism of the central artery of the retina.

These ophthalmoscopic pictures can be explained only as visible expressions of circulatory interference and vascular changes in the region of the central artery of the retina, which are to be found immediately after the initial blindness. It cannot be doubted that there is an interference with the circulation, for haziness of the retina is always an expression of a circulatory disturbance in the retinal or choroidal vascular system. It is met with in embolism of the central artery of the retina, in acute loss of blood, in persistent spasm of the retinal arteries, in thrombosis of the basilar artery, after section of the ciliary arteries, and after ligation of the vorticose veins. Even the traumatic so-called commotio retinæ is considered by several writers to be a retinal œdema dependent on an interference with the circulation.

The next question is whether the sudden and permanent blindness can be explained in these four cases by the visible degree of interference with the circulation. It can in the case here reported. Even in Haberkamp's cases it seems reasonable when we remember that, not rarely after profuse hemorrhage, acute infectious diseases, injuries to the skull, and in anæmia, sudden and permanent attacks of blindness have been observed, when the ophthalmoscope revealed the same picture as that described by Haberkamp. The retinal haziness found in Nieden's case seems at first insufficient to explain the permanent blindness until we recall that the examination was made at a later time than in the three other cases. It may be assumed that if the examination had been made earlier greater vascular changes, sufficient to account for the blindness, would have been found. But we need no special, great, visible change in the fundus to

explain a sudden, even a permanent, peripheral blindness, for in the so-called retrobulbar neuritis, and sometimes in blindness from such causes as meningitis, we find at first an absolutely negative condition, and later the increasing whiteness of the papilla tells of an affection of the optic nerve.

I cannot agree with Haberkamp when he favors a direct, primary action of the poison on the fibres of the optic nerve. The early conditions found in these four cases seem to me to indicate that the poison primarily produces vascular changes, and that the destruction of the nervous elements follows secondarily through impairment of nutrition from lack of oxygen. This view is favored both by recent clinical experience regarding the therapeutic action of this drug and the results of recent experimental toxicological researches. Regarding its clinical action as a vermifuge, it is not improbable that the extract of filix mas is quickly taken up by the blood which is drunk from the intestinal wall by the ankylostomata, and that these parasites are then carried away, either benumbed or dead, by the fæces. Tenholt draws this conclusion from the fact that intestinal parasites which are not blood drinkers and do not cling to the intestinal walls are not affected by the extract of filix mas, and also from the observation that the effect of the drug is less when given in capsules which dissolve in the intestine so that only a small part of the poison is absorbed into the blood. If the drug acted directly on the parasites this method of administration would, on the contrary, produce a greater effect. Another observation which favors the theory that filix mas acts indirectly on the parasites is, that thymol, formerly recommended for ankylostomiasis, passes through the intestine almost unchanged, is not absorbed into the blood, and does not affect the ankylostomata.

As regards the toxicological properties of filicic acid and its poisonous derivatives, it has been shown that they affect not only the nerves and the cerebro-spinal system, but also the muscles. Straub has also shown that the poison of filix mas, as a plasma poison, irritates and then kills the muscle cells without interrupting the nerve conduction.

Taking all the foregoing into consideration, the production

of the amaurosis may be thus explained. The poison absorbed into the blood enters the central artery of the retina and its branches. Here the delicate muscularis of the vessel walls reacts and assumes a condition of irritation which produces an arterial spasm. This condition is sufficient to destroy the functions of the ganglion cells of the retina (as these have little power of resistance to the lack of oxygen) and to produce the sudden initial blindness. If the toxic action and the arterial spasm passes off in this stage, the function will be restored and the amaurosis pass away. If the toxic action is increased by further absorption, paralysis of the muscular tissue of the vessel follows, with consequent dilatation, retardation of the blood stream, and vascular stasis. The consequence of this is a further interference with the nutrition of the nervous elements and serous infiltration, which when prolonged destroys the function of the delicate ganglion cells and later the other retinal layers and the optic-nerve fibres. The deleterious action of this local interference with the nutrition of the nerve substance depends on the lack of oxygen and the increase of carbon dioxide in the general circulation, changes which are due to the retardation of the blood stream in consequence of the lowered respiration and heart action in the toxic collapse. If the rapidity of the blood stream is so reduced in the region of the central artery of the retina that thrombi are formed, the fate of the nervous elements is sealed. An after result is an atrophy of the optic nerve which gradually develops and can be recognized later from the whiteness of the papilla.

It is not improbable that an altered composition of the blood brought about by the poison co-operates in the production of any primary local interference with the circulation, and it is well known that alteration in composition predisposes to changes in the vascular walls and the formation of thrombi. It is therefore not strange that in three of these four cases the amaurosis occurred in people who had suffered for a long time from anæmia due to ankylostomiasis, which may therefore be held to predispose to vascular alteration and the formation of thrombi.

If the objection should be raised that the interference in the circulation seems to be confined to the region supplied by the central artery of the retina, it would only be necessary to refer to the stupidity, the loss of consciousness, and the collapse in filix-mas poisoning to satisfactorily prove interference with the circulation in the brain, and the fact that these conditions are frequently more transient than the blindness can readily be explained by the greater power of resistance of the brain substance.

The bilateral nature of the amaurosis has been adduced as an objection to its origin through primary interference with the circulation in the region of both central retinal arteries, but incorrectly, for, according to the statistics of Sidler-Huguenin and of Nieden, the amaurosis was bilateral in 19 and monolateral in 15 out of 47 cases of filix-mas poisoning in which the sight was affected. Moreover, the peripheral origin of the blindness must in that case be denied, which is impossible according to the ophthalmoscopic findings in these four cases.

More weight has recently been placed on primary vascular change to explain the production of blindness from other toxic causes than formerly. Thus Stölting has lately reported a case of quinine amblyopia with complete atrophy of the iris, which can be ascribed only to impaired nutrition through vascular changes, because no inflammatory symptoms appeared in the iris during the entire observation. Ward A. Holden states positively that in his experiments on dogs amblyopia appeared after injections of quinine only when there was an evident narrowing of the retinal arteries, and he is of the opinion that the principal cause of the changes found microscopically in the ganglion cells and the layer of nerve fibres of the retina is to be found in the lack of nutrition. From the fact that Holden found no histological changes in the vessels, it may be concluded that vascular changes demonstrable with the microscope are not absolutely necessary for the production of blindness, but that transient disturbances of the circulation may suffice.

The presence of a direct, specific action of the poison on the retinal elements and the fibres of the optic nerve is

unnecessary to explain the production of amaurosis by filix mas. If such an action exists, and this has not yet been demonstrated, it can play only an accessory or secondary part in hastening and completing the work of destruction in cases where the disturbance of the nutrition of the nervous elements by the changes in circulation does not suffice for the complete and permanent loss of function. In other respects we can agree perfectly with Sidler-Huguenin's theory that the amaurosis from filix mas is caused primarily by the action of the poison on the retinal vessels. If it should be claimed that the condition found in Haberkamp's case was one of medullary neuritis and the cause of the blindness be inferred to be a parenchymatous neuritis, it could be maintained that an inflammation of the nerve substance could scarcely develop to so high a degree in so short a time and result so quickly in complete optic atrophy, and it is to be noted that according to general pathological theories circulatory disturbances are necessary to the production of parenchymatous neuritis, the presence of which was indicated by the interstitial and perivascular œdema found microscopically by Nuel.

With the exception of the observations of Masius and Mahaim already mentioned, this covers all the anatomical evidence at hand regarding the correctness of this theory. More convincing evidence could not be obtained except from the microscopical examination of the eyes of men who have been blinded by filix mas and died in collapse from the poison, but these unfortunates generally escape with life though their blindness is permanent. It would therefore be desirable to find some other remedy for ankylostomiasis which would be accompanied by less evil collateral effects and would be more certain in its desired action than the extract of filix mas, but unfortunately attempts to find such a remedy have as yet proved fruitless.

PURULENT INFLAMMATION DURING FŒTAL LIFE AS THE CAUSE OF MICROPHTHALMOS AND ANOPHTHALMOS.

By Prof. HOPPE, of Cologne.

Translated from Vol. XXXIX., July, 1899, of the *Archiv f. Augenheilk.*, by Dr. Matthias Lanckton Foster.

IN the etiology of congenital microphthalmos and anophthalmos, great prominence is often given to the occurrence of inflammations of bacterial origin during fœtal life. I found 6 cases of microphthalmos and 3 cases of anophthalmos in a community of 23,000 persons, and in no less than 7 of these there were traces of past inflammation. But it is going too far to claim that all the changes present are products of inflammation, and that the inflammation was the cause of the malformation. The corneal opacities which often accompany congenital microphthalmos, even if not persistences of the fœtal opacity, are not necessarily due to inflammation of bacterial origin. It has been many times due to such causes as a hand fixed on the eye, or a general narrowness of the amnion. I shall try to show that purulent infection of the eye in the fœtus has not yet been satisfactorily proven, is improbable, and at any rate is not so frequent as would appear from the above statement and as Braun seems to assume.

The possibility of metastatic transmission of pus bacteria from the mother to the fœtus has been satisfactorily demonstrated by experiments on animals, usually by injection of pure cultures into the mother. But in the well observed cases of microphthalmos there is no record of any such

infection, nor of severe sickness of the mother during pregnancy; on the contrary, it is usually mentioned that the course of the pregnancy was normal, and that the health of the mother, or of both parents, was good. Syphilis does not usually produce a purulent inflammation of the eye in the fœtus, and there is no evidence of the presence of this disease either in the children with microphthalmos or in their parents. The clinical symptoms suggest a metastatic invasion of the eyes by gonococci, but we know that metastases of gonococci are relatively rare in post-fœtal life, almost never occur in women, according to Panas and Schmidt-Rimpler, and that when they do occur they cause an inflammation which runs a mild course, never one which is severe and results in phthisis bulbi. It is also to be considered that metastatic suppuration of parts more commonly the seat of such inflammation, such as the joints, has not been observed, so far as I can find, in a single case in which the fact of an infection may be shown. The hypothesis of a special susceptibility is not a good explanation of a frequently isolated, severe, bacterial disease of the fœtal eye, and the theory of a metastatic ophthalmia of bacterial origin in the fœtus is difficult to uphold.

The infection of the eye through the liquor amnii is still more difficult to maintain. Krückow found a cyst covered with cylindrical epithelium in a congenital staphyloma of the cornea with traces of a perforation. In order to explain this, he assumed that the palpebral fissure of the fœtus was forced open, perhaps by a traumatism, and the contact of the amniotic fluid with the cornea set up an inflammation which resulted in perforation, when epithelium from the respiratory passages suspended in the amniotic fluid floated into the corneal wound, settled there, and grew into the form of a cyst. The hypothesis of a traumatic opening of the palpebral fissure, which does not appear to have been based on any objective signs, Krückow and Kroll consider to be a necessary adjunct to the theory of infection through the amniotic fluid. The presence of normal conjunctivæ and corneæ in cases of congenital colobomata of the lids demonstrates that the amniotic fluid does not of itself

produce a purulent inflammation. An antibacterial property might rather be expected from its composition, which somewhat resembles that of tears. According to Piringer, a blennorrhœal secretion loses its infectiousness when it is diluted with plain water, so it might be expected that even if bacteria or their toxines succeeded in entering the amniotic fluid from the vagina, they would become harmless before they could reach the entrance to the eye, which normally is closed to both water and bacteria during fœtal life. If the amniotic fluid should fail to overcome the bacteria, on account of their number or virulence, inflammations of other parts of the fœtus would hardly seem to be avoidable, but such have not been mentioned in cases of microphthalmos. In Krückow's case, one can imagine that the cyst sprang from a germ descended perhaps from the neighboring nasal mucous membrane, and that in the course of its growth it had perforated the cornea. Kroll's case I consider one of interrupted growth. In Nieden's case I believe with von Hippel that there was an infection after the rupture of the membranes in spite of all precautions taken.

In many cases it is evident that the infection is not of primary etiological significance. This is the case when either on the eye or on other parts of the body there are indubitable signs of interrupted fœtal growth, the microphthalmos is of the same degree as these signs, and there is evidently a common, though usually unknown, cause. It will not do to claim as the common primary impulse an infection which would produce a purulent inflammation in the eye alone, and elsewhere a simple interruption of growth by interference with the local nutrition. Moreover, the malformations which accompany microphthalmos occur quite frequently and present no trace of inflammation. Purulent inflammation cannot be the cause of microphthalmos associated with colobomata of the tunics of the eye, cysts of the lower lid, absence or imperfect development of the lashes, entire or partial adhesion of the lids, hare-lip, cleft palate, hypospadias, anomalies of the heart and blood-vessels, oxycephaly, scoliosis, or club-foot.

A weighty point in favor of fœtal inflammatory origin is advanced by cases of microphthalmos in which a conjunctival discharge is discovered soon after birth. Yet the cases should be studied before this is accepted as evidence of true fœtal inflammation, *i. e.*, one which had begun before the fœtal membranes were ruptured. This study shows that the conjunctival discharge was not present at birth in two cases, was first noticed several days after birth in other cases, and that in one case some weeks elapsed before it was discovered. In other cases there is no definite statement that the inflammation was present at the time of birth. But even if it is granted that the conjunctival discharge was present at birth, there is still insufficient ground for the belief that it was caused by an infection prior to the rupture of the membranes. A series of observations has been made on congenital blennorrhœa due to common vaginal infection, especially after early rupture of the membranes. In such cases, when there is a sufficient quantity or virulence of the exciting agent, a conjunctival discharge may appear as evidence of the infection within a few hours, under certain circumstances at the end of labor. In order to exclude this explanation of the conjunctival discharges of newly born children with microphthalmos, a complete history of the course of labor at least is necessary, but this is generally wanting. Sometimes the manifest freshness of the discharge demonstrates with more certainty that it is not responsible for the conditions present, which have required much more time for their development, perhaps weeks or months. An inflammation characterized by an abundant, thick, creamy discharge, together with redness and œdema of the lids, is certainly of much more recent origin than one which has made the eyeball rudimentary, or caused it to disappear, made the lids sink deeply back into the orbit, shortened the palpebral fissure from 6 to 10*mm*, produced entropion, and lessened the size of the orbit in all directions.

Even if none of the cases cited by Braun and von Hippel in support of their theory can be accepted as the result of a truly intra-uterine purulent inflammation of bacterial origin, the fact still remains that very often, almost as a rule in

congenital anophthalmos, a conjunctival discharge is to be found either at the time of birth or shortly afterward. It must be acknowledged that there is a connection between this malformation and the conjunctival discharge, and I think it can be explained in the following manner.

Whenever from any cause whatever the fœtal eyeball is so small that the lids and the conjunctival sac are depressed backward into the orbit so that the eyeball or its rudiment lies in a little conjunctival sac at the apex of a funnel formed by the lids and the neighboring skin, so far back that often it is necessary to use such an instrument as a strabismus hook to lift the lids and permit observations to be made, the palpebral fissure is not tightly closed, the edges of the lids not rarely become turned in, and the amniotic fluid comes into direct contact with the conjunctival sac, where as a foreign body it constantly produces irritation, possibly causing reflex movements of the lids and rubbing of the lashes of the eye. Such an irritation would produce conjunctival changes and the presence at birth of abnormal redness, swelling, and discharge. During labor the vaginal secretions can be pressed easily into the conjunctival sac. Later the action of the lid muscles in crying and perhaps the manipulations made to see the missing eye increase the trouble. A timely and thorough cleansing of the eye is very difficult. The secretions in the conjunctival sac also increase mechanico-chemically the existing irritation and a mucous or purulent discharge is the consequence. Axenfeld even admits that typical ophthalmia neonatorum can arise from other than bacterial causes. If there are any pus bacteria in the vaginal secretions, they find in the conjunctival sac of microphthalmos an ideal place for development, and if they are of sufficient quantity or virulence a purulent discharge may appear within a few hours, which is often held to be synonymous with "at" or "shortly after" birth. The almost invariable occurrence of conjunctival discharge or blennorrhœa, which I found in nine out of ten cases of anophthalmos, is thus easily explained by the peculiar anatomical conditions, and my observations seem to prove that this explanation is the true one.

Case 1.—M., six days old. Mother has had a vaginal discharge for a long time. Considerable discharge from both eyes was noticed five hours after birth. Typical ophthalmia neonatorum. At the bottom of the right orbit there was a rudimentary eye half the size of a cherry stone. The right lower lid was distended by a cyst. No trace of the left eye could be seen or felt. There was entropion of the left lids which were pressed deeply into the orbit. The aperture of each orbit was greatly narrowed and the palpebral fissures were small. There was hypospadias. The cyst and the hypospadias dated from a very early fœtal period. The blennorrhœa was quite fresh, and evidently was no more answerable for the anophthalmos than for the hypospadias or the cyst.

Case 2.—R., nine days old. Blennorrhœa had been noticed on the right side during the course of the first day. Now both eyes were found to be absent. The entrance to each orbit could be easily covered by the volar surface of the first joint of the forefinger. Thick pus issued from a horizontal furrow. The skin which lined the funnel-shaped depression surrounding the deeply placed, small palpebral fissure was reddened and macerated almost to the inverted margins of the lids, while, on the contrary, the lashes and the little conjunctival sac were completely free from secretion. The latter was reddened by the introduction of two strabismus hooks. On the left side there was simply redness of the conjunctiva with the same anatomical condition as on the right. No trace of the eyeballs could be seen or felt.

There was a dermatitis, a form of intertrigo, on the right side, the products of which could have produced the blennorrhœa. The latter was cured in a few days by simple cleansing and oiling of the cutaneous funnel. The secondary infection of the conjunctiva which was feared did not occur.

Case 3.—F. S., two years old. It was said that at birth the lashes of the right lids were "grown into the eye." Treatment of this revealed to the mother that the eyeball was absent, but was simulated by a cyst of the lower lid. After the cyst had been punctured no rudiment could be felt. The other eye was normal and the child otherwise sound.

CASES OF CONGENITAL MICROPHTHALMOS.

Case 4.—U., twenty-four years old. Born blind. Eyeballs the size of cherries. Corneæ irregularly oval, about 8*mm* in

diameter, perfectly clear. Right eye: Lower quarter of pupillary margin of iris turned backward and downward and adherent to the lens capsule, which also shows traces of pigment. Lower part of fundus covered with masses of pigment. Left eye: Total posterior synechia, pupil small and kidney-shaped. Capsule of lens opaque. Tension —. Complete amaurosis.

Case 5.—O., six years old. Born blind. Both eyeballs very small. Total posterior synechia. Crater pupil. Shrunken cataract.

Case 6.—K., fifty-six years old. Nystagmus. Left eye normal; iris blue. Right eye: Strabismus convergens and sursumvergens. Eyeball and cornea much smaller than the other. Iris yellowish-gray, tremulous. Congenital coloboma downwards and somewhat inwards. Amaurosis.

Case 7.—L., thirteen years old. Nystagmus. Left eye: Convergent strabismus. Eyeball of almost normal size, cornea much too small, irregularly oval, clear. Pupil placed excentrically downward and kidney-shaped. Posterior synechiæ. Vision, movements of the hands when very near. Right eyeball as large as a small cherry; cornea of corresponding size, irregularly round, clear. Pupil looks like a many-rayed black star. (More could not be learned on account of bad illumination and lack of means.)

Case 8.—Boy thirteen years old. Imbecile; born blind; oxycephalic. Nystagmus. Right eyeball somewhat smaller than normal; cornea and lens clear. Coloboma downward of iris and choroid. Entrance to left orbit oval. Vertical diameter *3mm* less than on the right side. Left eyeball as large as a pea, the little round cornea opaque, the iris not to be recognized.

Case 9.—H., nine weeks old. The entrance to the right orbit and the right eyeball much smaller than the left. Right cornea round, *3mm* in diameter, clear. On the left side the eyeball, cornea, and lens were normal, with coloboma of the iris and choroid. Scoliosis.

Case 10.—Fœtus in the fifth month. Exencephaly with amniotic bands. Moderate microphthalmos on each side. Corneæ irregular, oval, opaque, and containing chalky deposits. Coloboma of left upper lid and a bridge-like adhesion of the lid to the cornea. I have previously reported this case.

In conclusion, it may be said that while it is conceivable that congenital microphthalmos and anophthalmos may be

the result of purulent inflammation of the eye during fœtal life, such a cause has not yet been demonstrated clinically and is at any rate very rare. The traces of old inflammation met with on congenitally microphthalmic eyes are not, as a rule, connected with the cause of the malformation. The conjunctival discharge, which is often seen at or soon after birth, is also of no etiological importance. It arises from the action of irritations of a mechanical, mechanico-chemical, or bacteriological nature upon the conjunctiva during fœtal life or at birth. In the latter case we have to deal with an infection in the typical manner.

THE TRANSPLANTATION METHOD FOR THE TREATMENT OF TRICHIASIS, AND NEW INSTRUMENTS FOR THE OPERATION.[1]

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(*With three text-cuts.*)

AMONG the different methods for the surgical treatment of trichiasis, the foremost place should be given to the one which, while not deforming the lid or sacrificing any of its tissue, brings the lashes in a position the nearest possible to the normal.

This I have endeavored to attain by modifying the so-called Italian method, or Scimemi's margino-plastica, and by using new instruments in performing it.

The original Scimemi's operation[2] consisted of an incision in the margin of the lid, as long as the trichiasis required and sufficiently deep to permit of the insertion of a skin flap taken from the outer surface, along and a few millimetres distant from its border. After making the marginal incision, the flap was dissected as long as necessary, and the skin wound connected with the marginal incision by means of two vertical cuts, one at each end, through the thickness of the ciliary border. The result of the operation was usually good, but the appearance of the lid was not always entirely satisfactory.

Sgrosso[3] modified the operation by abolishing the vertical cuts, and shifting the flap into the marginal section by rolling it over the lashes. The flap was left for a few days attached to the skin of the lid by a bridge-like portion over the lashes, so as to insure the nutrition of the graft until

[1] Read before the N. Y. Academy of Medicine (Ophthal. Section), Jan. 16, 1905. Cases illustrating the paper were presented at a previous meeting.

[2] *Bollettino di Oculistica*, vol. xi., Nos, 12–13, 1889,

[3] *Lavori della Clinica Oculistica di Napoli*, vol. iv., 1896.

firmly attached, when the bridging part was cut off and the operation completed. With the process so modified, there is greater danger of the flap becoming necrosed, as the part bridging the lashes sometimes dries quickly, before the rest has time to attach.

In order to remedy these defects and make the operation easier to perform, I devised a change in its technic, adopting new instruments, and also a modification of the method itself, which, while insuring a fresh bleeding surface for the flap in its whole length, avoids the cutting of the hairy border.

It is not out of place to recall that Scimemi's operation was performed by the aid of Jäger's horn-plate lid-holder, which did not give a firm hold on the lid, deformed as this often is after a long-standing trachoma, hence the making of the marginal section and of the flap to be grafted was a tedious task. Hemorrhage could not easily be controlled by the finger pressure, which acted extremely slowly as it may well be imagined it would in a lid where the blood supply had been increased by the influence of a chronic inflammation. The blood constantly covering the field prevented the operator from making an even intramarginal cut and a uniformly shaped flap, besides the difficulty in operating free-hand.

The instruments I have devised are two: one called the marginal forceps, the other the flap forceps. Of the latter I have two models.

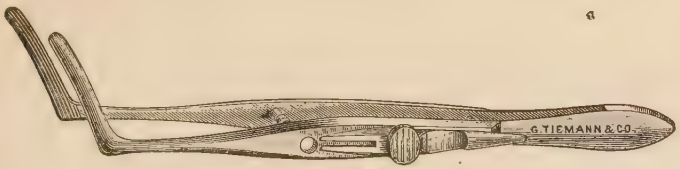

FIG. 1.—Marginal Forceps.

The marginal forceps are made right and left, according to the side on which the operation is required, and are intended for the marginal incision. They are like a fixation forceps up to the elbow, at which point they form an angle of about 125° with the attached portions of angular pieces. These are about 20*mm* long and slightly curved so as to adapt

themselves to the curvature of the lid from canthus to canthus. The inner surface of the angular pieces is corrugated in order to hold the lid firmly; the one corrugated on its convex surface is to be inserted under the lid, so as to come in contact with the tarsal conjunctiva while the other piece presses the lid from the outside. The angular pieces should be placed about 4*mm* from and parallel to the margin of the lid, and the forceps closed. When so applied, the surgeon rotates the instrument and the lid about 25° or 30° and in this position makes the marginal incision.

The flap forceps carry on one branch a small oblong plate, which is slightly curved from side to side to adapt itself to the curvature of the lid, and serrated on the surface coming in contact with it. The other branch is made different in the two models: in the one more commonly used, it terminates in a narrow piece about 25*mm* long and a little over 1*mm* wide, attached at its middle. It is shaped to follow the outline of the margin of the lid, which is curved on the horizontal as well as the vertical line; the lid surface is serrated in order to hold firmly.

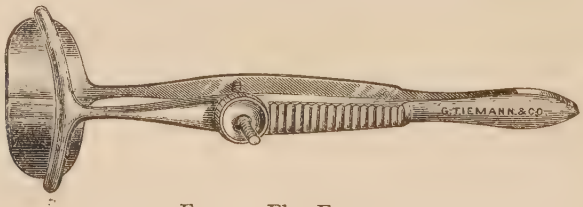

FIG. 2.—Flap Forceps.

The plate is placed beneath, the narrow piece on the lid about 3*mm* from the margin, and the screw arrangement tightened. The surgeon then makes incisions on the integument covering the lid along the margins and on the guide of the narrow piece, being careful that the resulting skin flap is attached at its extremities. The instrument is now removed and the lower incision completed in the middle. Needless to say, both marginal and flap forceps, when properly placed and fixed, exercise sufficient pressure to prevent hemorrhage, thus shortening considerably the time of the operation.

The flap is now very carefully dissected and deprived as far as possible of superfluous subcutaneous connective tissue.

The marginal incision must be about 3*mm* deep, the deeper the better, as the flap will attach much easier. The section is made between two imaginary lines, one represented by the excretory ducts of the Meibomian glands, the other by the lashes. When the patient has been subjected to epilation, it is good policy to wait until the faulty lashes have grown, before performing the operation. No trouble has been experienced when the incision fell in the line of the Meibomian glands: this is a common occurrence in cases where the trichiasis is accompanied by a more or less pronounced entropion and atrophy of the margin. I had heretofore considered that the secretion from the Meibomian glands would in a measure interfere with the attaching of the flap, but find a slight curettement sufficient to obviate this difficulty.

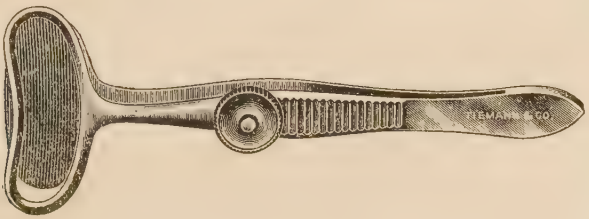

FIG. 3.—Represents the other model of flap forceps, resembling closely Desmarre's entropion forceps, except in the curvature of the flap guide.

As soon as the flap is ready to be placed in position, the marginal cut is freshened, so as to bleed, and completed by prolonging it at each end, in order to connect it with the skin wound resulting from the detaching of the flap. The prolongation of the incision toward the inner canthus is made in that part of the margin normally deprived of lashes and must follow a straight line as much as possible. Sometimes it is a necessity to cut off a very thin strip of marginal tissue, which is replaced by the flap, so as to insure an even surface after the attaching.

The prolongation outward is made as close as possible to the outer canthus and also as nearly straight as possible;

the prolonged marginal section at either end meets the apex of the skin wound at a very small angle.

This modification of the original method makes necessary that the flap be a little longer, which is not a great disadvantage, while the cosmetic result is decidedly more satisfactory.

In cases where the rima palpebrarum is small and a canthoplastic operation would be required, it is a good plan to make first a canthotomy, about 5*mm* long, then complete the marginal incision and skin wound so as to meet the apex of the cut made in the canthus.

Now the flap is allowed to lie on the resulting continuous bleeding surface, and the ciliary border of the lid is practically displaced upward and rotated outward as far as the thickness of the flap. This done, the skin wound is sutured and vaseline dressing applied, being careful in separating the margins of the lids by a thin cotton pad saturated with vaseline. The dressing is repeated every day for a week or so, and removed as soon as the healing of the wound is assured.

In cases where the trichiasis is accompanied by a marked entropion, or the tarsus is abnormally thick, after dissecting the flap I remove a piece of the cartilage, from 2 to 4*mm* in width, and complete the operation as usual.

In cases where only a part of the lid is affected by trichiasis, the operation need not be performed along the whole margin, and the flap will then have only one attachment.

The only accident which, so far, has happened during one of the operations, was the cutting of the flap about its middle. I placed the two resulting pieces in the marginal section and passed a double-needled suture, one through each end, and fixed the suture on the skin of the lid, just above the line of the lashes. The flap attached as usual.

Since adopting this modification of the method, I have operated five eyes in four different patients at the New York Eye and Ear Infirmary, and in all cases the patients were discharged as cured, none of them returning to the clinic, while for years previous we had them as steady customers. Of the fourteen private cases I have operated in the last two years, the reports are all gratifying.

In one case, which I operated six years ago, with the original Scimemi's method, the entropion, very slight at the time of the operation, kept increasing until almost all the graft turned inside, annoying the patient very much. Of course I could not have prevented this, even if at that time I had adopted the new method; in order to relieve the patient of the tedious friction of the flap on the cornea, I shaved off its skin surface and let it granulate, with the result that, after healing, it looked very much like a mucous surface.

The flap, as a rule, attaches readily; only in one case I found it partly displaced after the first twenty-four hours, and it became necrotic to that extent, about 10*mm.* The operation can be repeated several times without much damage to the lid.

One of the objections made to the original method, that seem to stand against it, modified as it is, is the growing of the hairs on the newly formed margin, which required depilation as badly as the trichiasis itself. It is a fact that some hairs overgrow on account of greater nourishment of the bulb owing to the increased vascularization of the whole margin following the operation. However, such hairs can be eradicated right from the follicle as they do not break above it, as is the case for the lashes. These are deeply imbedded in the muscle of Riolani, which, inflamed under the influence of trachoma, is replaced by connective tissue, hardened and deformed, together with the tarsus. The lashes then do not follow a straight line and break when we want to remove them. The presence of overgrown hairs is annoying, but it has occurred to me only once in the many cases operated, and I had to use the epilation forceps but once for all. Sgrosso[1] reports over two hundred cases operated by him, none of which ever required epilation of the graft. So I came to consider the objection as not a serious one, especially if we take into account on the one side its rare occurrence, and on the other the good features of the method, whose effects have proved to be permanent.

[1] *L. c.*

CYSTS OF THE PARS IRIDICA RETINÆ, WITH REPORT OF A CASE.[1]

By Dr. EDWARD L. OATMAN, Brooklyn, N. Y.,

SURGEON TO THE MANHATTAN EYE, EAR, AND THROAT HOSPITAL, NEW YORK CITY.

(*With four figures on Text-Plates V. and VI.*)

SMALL cystoid spaces, situated in the pigmented epithelium, on the posterior surface of the iris, are not infrequently observed in eyes enucleated for various diseased conditions. They are usually associated with some destructive process which renders their presence only of secondary importance. Occasionally they are of large size, and in a few rare instances they have constituted the principal clinical and pathological feature of the case. They were described first by Treacher Collins, who reported three cases and explained their pathological anatomy.

The case here reported was found in a totally blind and glaucomatous eye, enucleated by my colleague, Dr. Neil Hepburn, at the Manhattan Eye, Ear, and Throat Hospital. Microscopic examination of the eye revealed the changes characteristic of glaucoma absolutum, including total seclusion of the pupil by posterior annular synechiæ. In addition, a large serous cyst was observed on the posterior surface of the iris. It extended from the pupillary margin to the ciliary body and was lined throughout with pigmented cells. Its anterior wall bulged forward into the anterior chamber, forming a partial bombé iris (Fig. 1). In order to study the cyst walls, it was necessary to discharge the dense pigment by a process of bleaching. Sections thus

[1] Read before the New York Academy of Medicine, Section on Ophthalmology, March 20, 1905.

ILLUSTRATING DR. OATMAN'S ARTICLE.

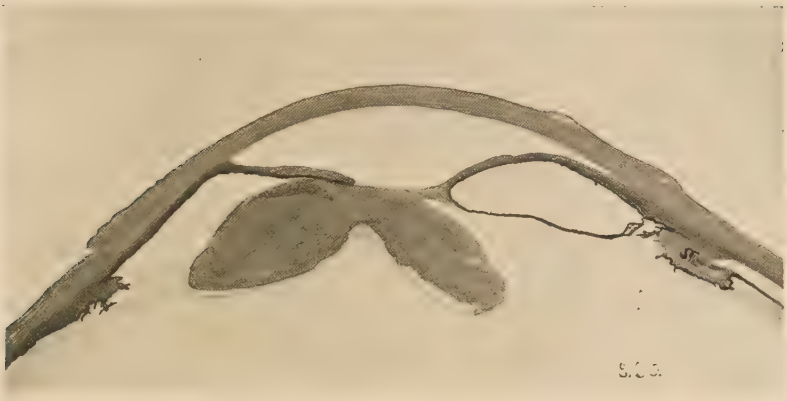

FIG. 1.

FIG. 2.

FIG. 1.—Large cyst in retinal epithelial layers of iris. The other pathological changes are due to glaucoma. Obj. 3 in. Oc. 1½.

FIG. 2.—Small cyst of the pars iridica retinæ, evidently formed by shrinking of the inflammatory exudate which binds the iris to the lens. Obj. ⅔. Oc. ¾.

ILLUSTRATING DR. OATMAN'S ARTICLE.

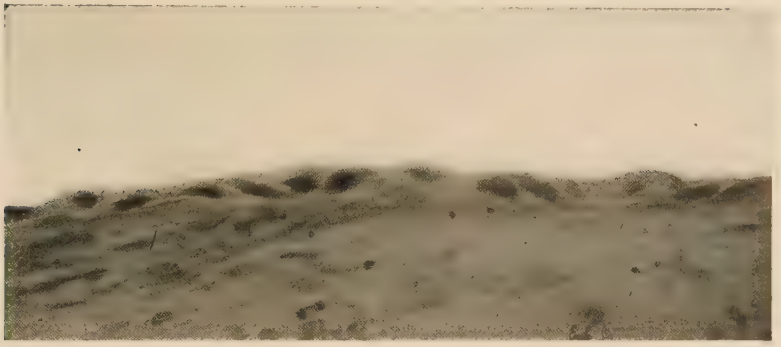

FIG. 3.

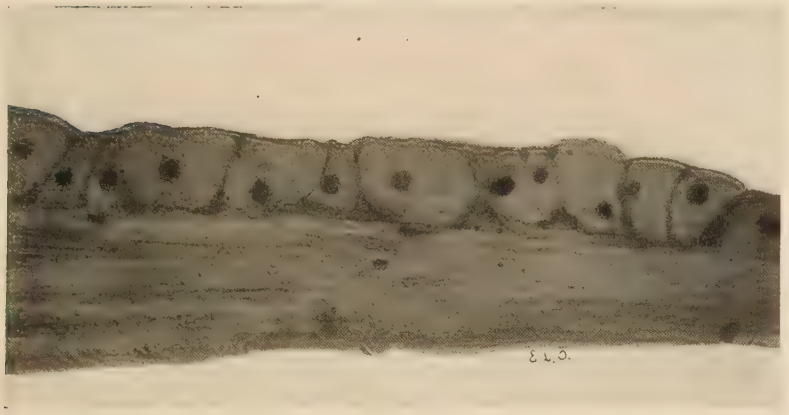

FIG 4.

FIG. 3.—Bleached section of anterior wall of cyst. The spindle cells, which constitute the outer layer of the pars iridica retinæ, are attached to the posterior surface of the iris tissue. Obj. ⅛th. Oc. 1.

FIG. 4.—Bleached section of posterior wall of cyst. The polygonal cells, which constitute the inner layer of the pars iridica retinæ, rest upon a membrane formed from inflammatory products. Obj. ⅛th. Oc. 1.

treated showed that the cyst resulted from a separation of the two layers of pigmented epithelium which form the retinal tract of the iris. The anterior cyst wall was formed by the highly atrophic iris and lined with the outer layer of these cells, while the posterior wall consisted of the inner layer of cells resting upon a fibrous membrane which evidently resulted from the organization of old plastic exudates. Some proliferation and swelling of the cells were observed.

The development of these cystoid formations depends upon the peculiar anatomical arrangement of the parts. The two layers of pigmented epithelium which form the pars iridica retinæ are of embryological interest, inasmuch as they represent the anterior limit or edge of the secondary optic cup. In the fully developed eye, the outer layer consists of a single row of irregular, ill-defined, spindle-shaped elements inseparably united to the posterior surface of the iris tissue (Fig. 3). The inner layer is made up of well-defined columnar or polygonal cells, with spherical nuclei (Fig. 4). These layers, which retain their embryological identity, are easily separated from each other, as observed in cases of ruptured posterior synechiæ in which cells from the inner layer remain attached to the lens, since the pathological union is firmer than the physiological.

It is probable that a combination of factors is necessary to produce a cyst in the retinal epithelium of the iris. The shrinking of organized plastic exudates may separate the inner from the outer layer, particularly if the iris is sclerosed and rigid. The small cyst shown in Fig. 2 appears to have been produced in this way. Perhaps the support afforded the inner layer of cells by inflammatory products is essential to the formation of a very large cyst. Treacher Collins regards obstruction to the lymphatic circulation as the principal cause. This was exemplified in one of his cases, where a cyst apparently was due to the presence of a sarcoma in the ciliary body, which obstructed the iris circulation. Obstruction is promoted also by adhesion of the periphery of the iris to the cornea. Another possible factor is a vitiated aqueous humor. This is illustrated in severe cases of diabetes, in which iridectomy may be followed by swelling,

softening, and proliferation of the pigmented epithelium of the iris, and also by the formation of large cysts. This condition is attributed to the presence of sugar in the aqueous. It occasionally occurs in degenerated eyes aside from diabetes. This indicates that any profound alteration in the composition of the aqueous may affect the cells of the pars iridica retinæ.

The inner layer of pigmented iris epithelium is continuous with the inner non-pigmented epithelium of the ciliary processes, consequently detachment of the former may lead to detachment of the latter, so that a portion of the posterior cyst wall is formed by non-pigmented cells. Such cases are reported by Schieck and Rabitsch.

Although these formations are called cysts, their analogy to detachment of the retina is very evident. In fact, they are detachments of the pars iridica retinæ. The term "cyst," however, is a very convenient one to employ for clinical purposes.

These cysts are uncommon; nevertheless, it is important to bear in mind their possible occurrence, as they sometimes constitute one of the most important features of a case. This fact is illustrated by the following reports.

Treacher Collins, in his original paper on this subject, described the case of a man, aged sixty-four, with mature cataract. "Projecting from behind the lower margin of the pupil, was a deep brown, mobile mass, having a sharply defined margin, with a slight notch in the centre." The cataract was extracted with iridectomy downwards, the tumor being included in the section of iris removed. Microscopic examination proved that it was a cyst formed between the two layers of pigmented iris epithelium.

Earls and Sinclair reported a case in which they observed two dark-brown, globular masses, extending from behind the iris into the upper and outer pupillary area. They were freely movable and exhibited a fine, jelly-like trembling of the surface. The diagnosis was cysts of the pigmented epithelial layer.

The most instructive case thus far reported is the following, by F. Schieck.

A servant girl, twenty-two years of age, had cataract in the right eye. Several months before, an ophthalmologist diagnos-

ticated intraocular growth. Schieck extracted the cataract with iridectomy upwards. Secondary cataract followed from retained lens matter. Now, when the patient looked down and in, three brownish nodules, lying close together, were distinctly seen between the iris and lens-remnants. They resembled tumefactions of the ciliary processes. The diagnosis was melanosarcoma of the iris and ciliary body. The eye was enucleated and examined microscopically. The supposed sarcoma proved to be three pigmented epithelial cysts, situated on the posterior surface of the iris and ciliary body.

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Schieck, *Klin. Monatsbl. f. Augenheilk.*, 1904, xlii., 2, p. 341.

TWO CASES OF ANOMALIES OF THE VASCULAR SYSTEM OF THE OPTIC PAPILLA.

By CHARLES J. KIPP, M.D., Newark, N. J.

(*With two figures on Text-Plate VII.*)

CASE 1.—PRÆPAPILLARY VASCULAR LOOP OF RETINAL ARTERY.

A boy about fifteen years of age consulted me for an inflammation of both eyes. I found the eyes to be emmetropic, with V $\frac{5}{5}$ in each eye.

With the ophthalmoscope I saw in his right eye (Fig. 1) a perfectly normal fundus, with the following anomaly: On the disk, about half-way between the centre and the lower periphery, the main lower branch of the central retinal artery divided into two branches of unequal size; the smaller one of these continued downward to the edge of the disk and then ran towards the temporal half of the fundus, where it was distributed in the usual way. The other, larger branch, protruded into the vitreous in a direct line for about *2mm;* it then turned backward forming a sharp loop, coiled itself around the protruding branch four times, and just before reaching the level of the disk it curved towards the nasal side over the lower-inner quadrant of the disk, and entered the *retina* a very short distance from the margin of the disk; from here on it pursued the usual course of the inferior nasal branch. The surface of the disk was most distinctly seen without a glass (the observer being emmetropic), while the anterior extremity of the loop was best seen with a + 6 D glass.

The color of the outgrowing branch was the same as that of the retinal arteries, while the recurrent part, wound round the former, was of a distinctly darker color up to the disk, but in its subsequent course it was again of the same color as the arteries. On

ILLUSTRATING DR. KIPP'S ARTICLE.

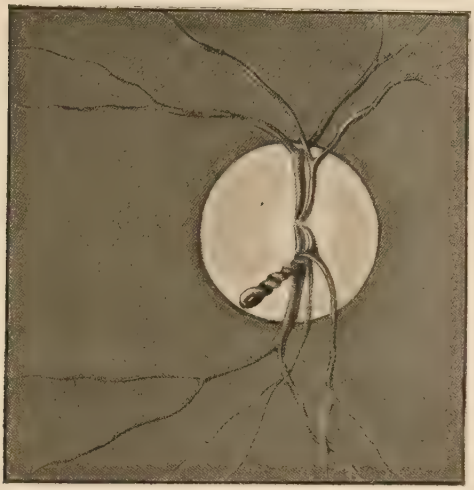


FIG. 1.—Right Eye.

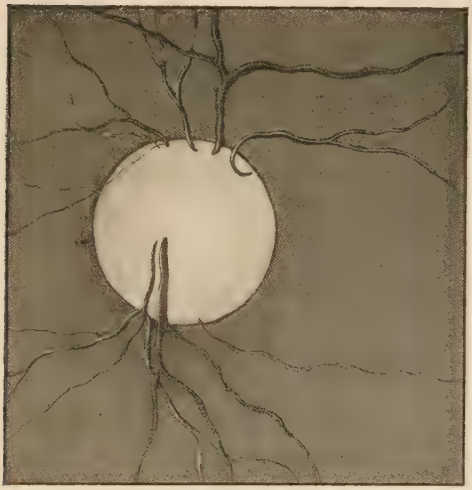


FIG. 2.—Left Eye.

both the outgoing and the recurrent parts was the light streak distinctly visible. On very close examination, both the outgoing and the returning portion of the vessel seemed to have a faint whitish covering (outer wall of vessel?). The protruding vessel was stationary. It did not change its position in the least with the movements of the globe. Pressure on the globe produced a marked pulsation synchronously with the radial pulse, the end of the loop making at the same time a slight up-and-down excursion. Even great pressure failed to empty the vessel. The vitreous was perfectly clear. The other retinal arteries and veins were distributed in the usual manner. There was no entoptic phenomenon caused by the protruding vessel. The visual field was normal.

The anomaly here described belongs to that extremely small group of cases in which the protruding vessel is distinctly seen to be a part of the arterial system of the retina.

The late Dr. W. S. Little, of Philadelphia, described a similar case under the title of "A Persistent Hyaloid Artery," and illustrated it by a colored drawing, in the *Trans. of the Amer. Ophth. Soc.*, 1881, p. 289.

Another case was described by Czermak in the *Centralbl. f. Augenheilk.*, 1883, p. 289.

Hirschberg described a similar case in the *Centralbl. f. Augenheilk.*, 1885, p. 205. Other cases have been published by Wachtler, *Wiener med. Wochenschr.*, 1896; Günsburg, *Klin. Monatsbl. f. Augenheilk.*, 1899, p. 173; Bondi, *Klin. Monatsbl.*, 1899, p. 339; Hirsch, *Klin. Monatsbl.*, 1899, p. 34; Alexander, *Zeitschr. f. Augenheilk.*, Sept., 1903, p. 188.

Cases in which an artery protruded from the disk into the vitreous and returned to the disk, where it entered or united with an artery on the disk, have been reported in considerable numbers.

The literature up to 1890 can be found in De Beck, *Amer. Ophth. Monographs*, No. 1, "Persistent Remains of Hyaloid Artery," p. 53. A list of the cases published since then is found in Alexander, *op. cit.*, 193. To this should be added a case by T. R. Van Geuns, *Zeitschr. f. Augenheilk.*, April, 1904, p. 316.

Most of these cases are described as instances of a persisttent hyaloid artery, a few as anomalous retinal vessels. Günsburg, *op. cit.*, regards all cases in this group as instances of a persistent hyaloid artery. On the other hand, De Beck, *op. cit.*, p. 53, speaking of these cases, says it is manifestly erroneous to include them under the head of persistent hyaloid vessels. They have no genetic claim here. Only the most superficial consideration, misled by position alone, can regard them as belonging here. They may be regarded as anomalous branches of the arteria centralis retinæ. v. Hippel, "Die Misbildungen und Angeborenen Fehler des Auges," *Graefe-Saemisch Handbuch*, 2d edition, vol. ii., p. 72, says: "Under the designation of art. hyal. persistens a large number of cases have been described in which the diagnosis seems to me not to be warranted. The origin and importance of this loop-formation can not be explained at present, but the normal hyaloid artery, as far as we know, never takes such a course during its existence, and a vena hyaloidea is unknown. It is therefore not justifiable to interpret these cases as instances of persistent hyaloid artery. That they are not remains of the embryonal vascular system of the vitreous is shown by the exhaustive researches of O. Schultze, *Festschrift für Köllicker*, Würzburg, 1892, according to whom these vessels disappear entirely, and are never transformed into retinal vessels, and the new-formation of definite retinal vessels proceeds from the papilla."

To the present writer it seems most probable that in both groups the vessel projecting into the vitreous is part of the arterial system of the retina, and is nothing more than an exaggerated degree of the loop formation of arteries often seen in the retina.

CASE 2.—ABSENCE OF ARTERIAL VESSELS FROM CENTRAL PART OF DISK.

The left eye (Fig. 2) of the same boy, was E V $\frac{6}{5}$, and normal in every respect, except that the central retinal artery was absent from the disk, and that all the arterial branches made their appearance at the periphery of the same. Their distribution in the retina

presented nothing unusual. Of the retinal veins, the branches coming from the upper half of the fundus entered the disk at the upper periphery, while those from below united in a large and a small branch, which continued on the disk to about the middle, and then entered it. The disk itself was rather pale, but flat, and the scleral and choroidal rings were well marked. The disk was of normal size.

We have here, then, in one eye an excessive development of the retinal arterial system and in the other a defective development of the same.

This interesting condition is but rarely met with. I do not remember to have seen a similar picture in another person during the thirty-five years that I have been in practice, and colleagues of larger experience have assured me that they have never seen this condition.

Dr. F. Dimmer (*Der Augenspiegel*, 2d edition, p. 136) says: "The papilla may appear devoid of vessels. The retinal vessels in such cases make their appearance at the margin of the papilla, or even at some distance outside of it."

Loring, *Text-Book of Ophthalmoscopy*, vol. i., p. 102, speaking of anomalies of the vascular system of the optic nerve, says: "Occasionally we see, on the other hand, an abnormal decrease in the number as a whole, or an arrest of development of a practical branch."

Lang and Collins, "Congenital Malformations and Abnormalities of the Eye," in Norris and Oliver, *System of Diseases of the Eye*, vol. i., p. 447, say: "The arrangement of the blood-vessels on the disk is very variable; occasionally they enter the nerve at the margin of the disk, the centre being free from all blood-vessels and very pale in color.

The only description of a similar case that I have been able to find in the accessible literature is by Lawford, in the *Trans. of the Ophth. Soc. of the Unit. Kingd.*, vol. xv., p. 195. In his case all the retinal vessels emerged from the optic disk at its margins. The central part, which was dark gray in color, was entirely devoid of large vessels. The eye was in other respects normal. H, 5 D. S, $\frac{6}{6}$.

A CONTRIBUTION TO THE PATHOLOGICAL ANATOMY OF GLAUCOMA.

By Dr. W. DOLGANOFF, St. Petersburg.

Abridged Translation from Vol. XXXIX., June, 1899, German Edition, by Dr. Matthias Lanckton Foster.

(*With seven figures on appended plates.*)

In September, 1897, a boy eleven years old, came to the clinic with a soft cataract in his right eye. The entire lens was opaque, of a milk-white color in the centre, with rather broad, dark stripes in the outermost periphery. R V, movements of the hand at the distance of one foot. Projection perfect. No external signs of irritation, inflammation, or stasis. Tension normal. Anterior chamber deep. Iris of normal color and of prompt reaction to light and mydriatics. Fundus not visible. L V, $\frac{20}{15}$. Hm. .75.

The date of the commencement of the disease and its probable cause could not be ascertained. The patient had suffered from neither acute nor chronic sickness and there was no family history of syphilis or alcoholism. Urinalysis gave a negative result. It was denied that the eye had ever received any traumatism, but it was finally decided that this was the probable cause.

Discission of the capsule was performed on Oct. 1st. A slight post-operative irritation disappeared on the fourth day. On Nov. 19th a more extensive discission was made, followed by as slight symptoms of irritation as before, and by rapid absorption of the lens, so that portions of the fundus could be seen early in December. But the result was not very satisfactory. The patient could no more than see movements of the hand at a short distance, but not count fingers, and no improvement could be made with glasses. Perception of light and projection still remained perfect. The tension was normal, or a little minus as is often the case in aphakia. The atropine and rest, previously

prescribed, were continued. In the latter part of December, a yellowish growth was detected by means of oblique illumination in the lower-outer segment of the eye, behind the ciliary body, with many branching vessels. From its color the new growth was thought to be either a glioma or a pseudo-sarcoma. The tension was plus. During the following month, the tumor grew rapidly until it reached the centre of the pupil. The tension was then plus 2. Enucleation was performed Jan. 28, 1898.

The eyeball was of normal size and outward appearance. A section made in the vertical meridian was followed by an escape of yellowish fluid which had occupied the space between the choroid and the detached retina. A thick layer of yellowish-green exudate covered the choroid. The anterior chamber was deep and contained blood in its lower angle. The peripheral third of the iris was adherent to the cornea, but the free central portion was pressed backward, together with the secondary cataract and the enlarged ciliary processes. The cataract was adherent to the retina, which was totally detached from the choroid and extended forward from the optic nerve in the form of a thick, folded cord. The latter was thickened in three places where it contained sacs filled with a thin yellowish fluid, and in addition several little blebs and hemorrhages of various sizes could be seen in the stroma of the retina.

The microscopic examination revealed :

1. Changes in the sclera, which were unimportant and consisted only of infiltration with lymphoid elements in the portion corresponding to the ciliary body and the root of the iris, and of a thickening of the walls of the vessels which passed through it.

2. No changes in the cornea aside from its agglutination to the iris.

3. In the iris, perivasculitis, formation of connective tissue, ectropion iridis, agglutination to the cornea and sclera, and loss of pigment.

4. Closure of Fontana's space with cell infiltration and pigmentation, and collection of lymphoid elements about Schlemm's canal.

5. In the ciliary body, infiltration, formation of connective tissue, and washing away of pigment.

6. In the ciliary processes great changes in form, loss of pigment, infiltration, and development of connective tissue.

7. Deformation and commencing degeneration of the cylindrical epithelia.

8. Increased development of connective tissue in, and laceration of, the ciliary portion of the retina.

9. Deposits of pigment where the iris and cornea were adherent, in the cicatricial tissue in Fontana's space, and in the membrane of the secondary cataract.

10. Congestion and in places infiltration of the choroid.

11. In the retina total detachment, retinitis proliferans et interstitialis, hemorrhages, cysts, fissuration, disappearance of nerve and epithelial elements, and erosion of the vessels.

12. In the portion of the optic nerve within the eye, perivasculitis and infiltration with lymphoid elements.

What was the primary cause of the disease? Where did it start, and in what order were the different portions of the eye involved? The patient came to the clinic with a completely formed soft cataract which was due either to a traumatism, which though denied cannot be absolutely excluded, or to a long-continued chronic disease of the vascular system. The latter theory is supported by the anatomical data, from which it can be seen that the sharpest, deepest, and oldest changes were in the ciliary body and its processes. The fact is thus established that the starting-point was in the ciliary body. But all the symptoms must be considered as resulting from this primary lesion, and in fact at the first examination the following condition was noted. Vision $\frac{1}{1000}$, tension normal, projection perfect even with faint light. This gives the right to conclude that at that time there was no glaucoma, no detachment, and no partial exfoliation of the retina. All of these came later, doubtless from the extension of the disease of the ciliary process to the neighboring parts, aided perhaps to a certain degree by the operations which were performed, though no marked reaction was observed on the part of the iris or the ciliary body. Slight inflammatory symptoms disappeared after a few days; the portions of lens substance which escaped into the anterior chamber caused no special irritation of the eye and were quickly absorbed. This serves as evidence that (1) the surgical manipulations

could not have been the cause of the disease of the ciliary body, and that (2) immediately after the operations the passage for filtration from the eye was perfectly free, so that the closure of Fontana's space and the agglutination of the iris and cornea occurred later. After absorption so little lens matter was left that part of the fundus could be seen through the opening, and at that time nothing pathological could be seen, but in the clinical history a scarcely noticeable increase of tension was remarked. The intraocular tension then began to increase without the usually accompanying changes, and after some time a rapidly developing new growth, or as it proved later a detachment of the retina, could be seen through the aperture in the cataract. This increase of tension with almost simultaneous detachment of the retina may be thus explained from the anatomical data: the chronic inflammation which at first was concentrated in the ciliary body and processes gradually extended to the junction of the iris and sclera, causing a gradual closure of Fontana's space, and a synechia between the peripheral part of the iris and the cornea which occluded the filtration angle. This extension of the inflammation occurred at least one or one and a half months after the operation and was the starting-point of the glaucoma. It was the chief factor in the production of the increased tension as well as of the increased secretion from the diseased ciliary processes. Then the connective tissue, which had formed on the posterior surface of the ciliary body and sent branches toward the cataract, ruptured, contracted, and curled up the ciliary portion of the retina from the subjacent tissues. The space thus formed became filled with fluid exudation, the accumulation of which caused a further rapid detachment of the retina which finally became total.

The disease started in the ciliary body and its processes (with coincident or subsequent formation of cataract), spread to the junction of the ciliary body with the iris and sclera, closed the filtration angle, and produced glaucoma. Then extension of the inflammation to the posterior part of the ciliary body caused rupture of the ciliary part of the retina and total detachment with the accompanying changes.

Several theories of glaucoma could be adduced to explain this case, but none of them accords with the clinical and anatomical picture.

1. The fluid which had been poured out in great quantity as the result of the vascular disease had produced increased pressure in the posterior part of the eye and in consequence had pressed the iris forward against the cornea and closed the excretory passage (Arlt and others). In opposition to this theory are the experiments of Hess, as well as the anatomical position of the iris and its relations to the neighboring parts. In this case there was no opposition of the entire surface of the iris to the cornea, as would be expected from this theory, but only a synechia of the peripheral third, while the unattached portion was drawn backward together with the ciliary processes, and this serves to show that the closure of the filtration angle originated about the root of the iris and occurred before the iris could be pressed forward by the increased tension in the posterior part of the eye.

2. The theory that the glaucoma resulted from the swelling of the cataract (Priestley Smith) is not tenable, because the cataract was not swollen and the anterior chamber was always deep.

3. The theory that the filtration angle was choked with lens matter or fibrin is also untenable, because the tension began to rise after almost the whole lens had been absorbed. A very small quantity of blood lay at the bottom of the anterior chamber, but the upper angle was left free for the passage of fluid.

4. The problematic importance of augmented size of the ciliary processes (Weber, Priestley Smith, and others), or of the processes being shoved forward during accommodation (Schoen), is excluded by the fact that even if the ciliary processes were enlarged they were drawn backward.

5. No hindrance to the passage of fluid from the posterior to the anterior part of the eye was caused by the thick membrane of the secondary cataract, because it contained several large apertures.

6. Czermak's complicated hypothesis is likewise inapplica-

ble in this case. Czermak holds that in consequence of a pathological condition of the vascular system, dependent as he thinks on age, the quantity of fluid secreted within the eye becomes less, the amount of aqueous is diminished so that the lens is pushed forward with the iris. Thus the anterior chamber is made shallower, the pupil dilated, the iris made thicker and brought into more or less coaptation with the cornea, and a gradual or sudden cessation of the outflow is rendered possible. But in this case the anterior chamber did not become shallow. It may be added that it has not yet been proved that secretion is diminished in glaucoma and senile changes of the blood-vessels.

The cause in this case is thus determined by exclusion to be iridocyclitis with anterior peripheral synechia and localization of the pathological process in Fontana's space and the outlet of the anterior chamber. This case seems to me particularly worthy of note, because it was the eye of a young person which was affected, and consequently all the changes found could be determined to be causative of or results of the glaucoma, and not dependent on age, while most eyes in which glaucoma is studied anatomically are taken from adult or aged persons, where the changes due to the glaucoma are complicated and obscured by senile changes of the eye itself. The case is also interesting because of the extraordinary complication and confusion of its clinical course, which shows how imperfect is our ability to differentiate between intraocular tumors and simple detachment of the retina. The clinical symptoms were typical of a rapidly growing tumor; the anatomical examination revealed a simple detachment of the retina and a glaucoma which had been unsuspected from the clinical data.

Explanation of the Figures.

Fig. 1.—Macroscopic picture of half an eyeball. a, bullæ in a detached retina. b, folds of a ruptured retina. c, exudation lying on the choroid.

Fig. 2.—The same enlarged.

Fig. 3.—Schl., canal of Schlemm. i, infiltration. p, deposits

of pigment. R, retina. Os, ora serrata retinæ. L, lens. h, hemorrhages.

Fig. 4.—Place of adhesion between the lens and the retina. L, lens. R, retina. p, pigment. S, blood. v, vacant space.

Fig. 5.—Exfoliation of the retina. The portion is pictured which is marked in Fig. 2 with a star (*).

Fig. 6.—A portion of the choroid showing places of infiltration with leucocytes. rp, retinal pigment. mb, membrana basilaris. i, infiltration. ch. c, choriocapillaris, aa, ciliares breves. sp, suprachoroidal space (Schwalbe). sc, sclera.

Fig. 7.—A portion of the optic nerve within the eyeball.

Much infiltration and development of fresh connective tissue visible in the vessels.

ACCESSORY APPARATUS FOR LOCATING FOREIGN BODIES IN THE EYE AND ORBIT.

By Dr. GEORGE SLOAN DIXON,

CURATOR AND ASSISTANT PATHOLOGIST, ENO LABORATORY, NEW YORK EYE AND EAR INFIRMARY.

(*With two figures on Text-Plate VIII.*)

IT required but little experience in skiagraphy for the purpose of locating foreign bodies in the eye and orbit to demonstrate the unreliability of the fuse-metal indicator usually attached to the lower lid by means of adhesive plaster. The objections to its use may be enumerated: first, the difficulty of accurately measuring its position; second, its liability to movement during exposure, due to normal nictitation, which is usually increased after injury to the globe; and, third, excessive lachrymation, which occasionally occurs and loosens the plaster, permitting the position of the marker to be disturbed.

To overcome these difficulties, I have designed a marker, or indicator, which is attached to an ordinary mirror headband, utilizing the ball cut from an old mirror.

The skiagraph reproduced shows the indicator in position, 4*mm* anterior to the centre of the cornea. As will be seen at a glance, it is a modification of Dr. Sweet's method of centring the cornea, but applied to the McKenzie-Davidson method of holding the head.

The indicator may be described as follows: An old laryngoscope was selected, the ball cut from the mirror, and a brass rod soldered to the cut surface. A small ball with a set screw was made to accurately fit this rod, and to the sliding ball at right angles to its foramen was soldered a

thin copper wire of convenient length, and a drop of soft solder made to adhere to its free end. The indicator now complete, it only remained to attach the large ball to the headband by means of the socket, turn it up out of the way, adjust the band to the head of the patient with the rod in proper relation to the injured eye, place the small ball on the pole or rod in proper position, tighten the set screws sufficiently to prevent accident while manipulating the indicator, adjust it accurately to the centre of the cornea, measure the distance anteriorly, and record it. The indicator should not be allowed to touch the cornea.

It will be observed that it is only necessary to make one measurement when using this indicator, instead of two and sometimes three in the case of the fuse-metal marker.

This indicator has been used by the writer in the last twenty-four cases at the Eno Laboratory, connected with the New York Eye and Ear Infirmary, and in every instance has been entirely satisfactory.

Instead of using the head-rest originally devised by McKenzie-Davidson, in which the patient is placed in the sitting posture, I have recently been employing a modification which permits the patient to lie on his back, a more comfortable position for the patient, and much more convenient for the operator. The reproduction herewith will sufficiently indicate the character of the modification. Fixed parallel vision is secured by means of a rod attached to the frame of the plate-holder, carrying a sliding cross-piece at the top, from which is suspended a small rubber ball at a suitable distance.

To Illustrate Dr. Dixon's Article.

Fig. 1.

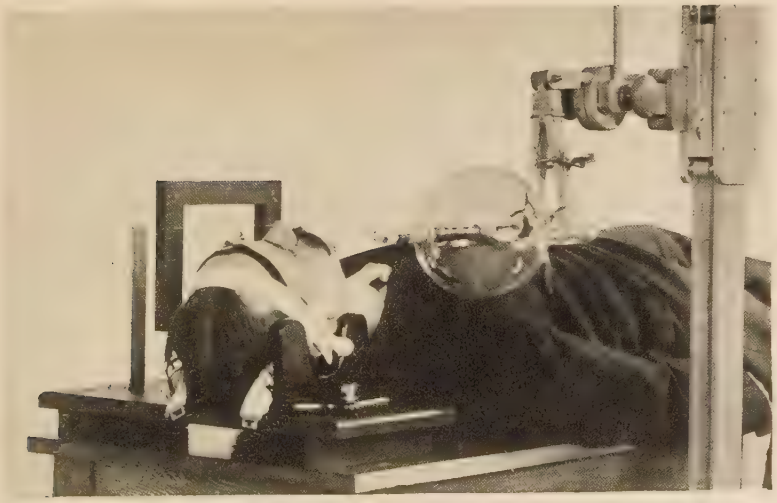


Fig. 2.

REPORT OF THE MEETINGS OF THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

By Mr. C. DEVEREUX MARSHALL.

CLINICAL EVENING, THURSDAY, DECEMBER 8, 1904. JOHN TWEEDY, F.R.C.S., PRESIDENT, IN THE CHAIR.

Mr. E. Harries Jones showed a patient on whom the diagnosis of **tumor of the optic nerve** had been made. He was a man, aged thirty-four, with a good family history, and with no history of venereal disease. The vision when first seen was normal, but it rapidly failed in the right eye, and proptosis developed. On August 28th, the orbit was explored and a soft round mass was felt on the nerve. The vision, in September, had fallen to $\frac{6}{36}$, and there was optic neuritis. Iodide was given till October, but was then stopped, owing to dyspeptic troubles. The vision improved to $\frac{6}{12}$ in December, but the proptosis remains.

Mr. G. W. Roll showed a baby, aged fourteen months, with **proptosis of each eye and lateral nystagmus,** but there was no pulsation. Both discs were atrophied, and in the right eye there was some choroiditis. The child is mentally deficient, but can sit up alone. There is abundant mucous discharge from the nares. The testicles are undescended, and the family history is not obtainable.

Mr. Arnold Lawson showed a **carton of aseptic sterilized dressings for intraocular operations.** He also showed a case of **congenital anterior staphyloma.**

Mr. A. Hugh Thompson showed two cases of **central senile choroiditis** in women, aged respectively sixty-three and seventy-eight. They showed different appearances, but the vision was much impaired in both.

Mr. Devereux Marshall showed a well-marked case of **posterior lenticonus** in a woman, aged twenty-three, who accidentally noticed the eye to be defective a few months ago. The condition was well seen with an ophthalmoscope mirror.

Messrs. G. W. Thompson and Edgar Chatterton showed **some sections of a cyst of Krause's gland.** The patient was a woman, aged twenty-five, who had a tumor of the upper lid, about the size of a pigeon's egg, which had followed a blow twelve years previously. The growth had been removed by operation.

Mr. George Coats showed two sisters, aged five and ten years, both of whom had **abnormal arrangements of the retinal vessels.** The vision in each case was normal.

Mr. J. W. Tomlinson exhibited Dr. Meisling's **color-mixing apparatus.**

Mr. Leslie Paton showed a female, aged thirty-eight, who was first seen in May last, with **proptosis of the right eye, with lateral displacement.** The vision and fundus were normal. Iodide and mercury were given, and a small portion was removed for examination, and this was thought to be inflammatory. It continued to grow, however, and an attempt was made to remove the growth without the eye. It speedily recurred locally, and was, no doubt, an endothelioma.

Mr. Leslie Paton also showed the results of an **operation for symblepharon,** which was caused by **orbital cellulitis.** The adhesion was extensive, and after dissecting the parts free he grafted the mucous-membrane lining of the roofs of the mouths of three frogs. These grafts took well, and the result over a year after the operation was very satisfactory.

Mr. G. E. Keeling showed a boy, aged ten and a half, whose eye was **wounded through the explosion of a dynamite cartridge** in June last. The wound was closed with stitches, and it healed well, with good vision. Since then, however, the eye has undergone extensive degenerative changes, and has become completely blind.

Mr. Harold Grimsdale showed a woman, aged forty-two, whose left eye had **become blind suddenly** some weeks before, and when seen the retina was detached, and there was no P. L. The vision of the other eye was normal. Shortly after, the good eye developed keratitis punctata, and it was suggested that this might be of sympathetic origin. There is no real evidence of tumor in the blind eye.

Mr. A. Stanford Morton showed a man, aged twenty-eight, who had had repeated **hemorrhages into the vitreous**, with much impairment of vision. A number of new vessels had since developed in the vitreous.

THURSDAY, JANUARY 26, 1905. JOHN TWEEDY, F.R.C.S., PRESIDENT, IN THE CHAIR.

Dr. Freeland Fergus related a case of **malignant disease of the conjunctiva**, but in his absence the paper was read by Dr. F. R. Hill, of Carlisle. The patient was a girl, aged nine, who was sent to him by Dr. Hill in November, 1903. On the lower part of the bulbar conjunctiva were some sprouting vegetations with an appearance not unlike that seen in spring catarrh. The limbus and palpebral conjunctiva were unaffected. It had first been noticed six months previously. The vision was $\frac{6}{9}$ and a portion was removed for examination. The pathological report was indefinite. Shortly after the rest was removed, and the patient was sent back to Carlisle under Dr. Hill's care. The pathological reports of Professor Muir and Mr. Devereux Marshall showed the growth to be of an unusual character, but probably a sarcoma, but its appearance left no doubt as to its being malignant. On March 21st, owing to its rapid extension, the whole contents of the orbit were removed and the patient was sent back on April 14th. On May 23d she was again seen, but the recurrence was so extensive that no operation was possible. The neighboring glands were also involved, and even at this time there were cerebral symptoms. The child died in October with the tumor of enormous size. The autopsy showed extensive involvement of the brain. The growth was apparently a leucosarcoma.

Mr. Parsons, who had examined the growth, said it appeared to him to be one of those rare cases when some nevoid tissue takes on malignant growth, and he looked upon it as being probably an epithelial growth rather than a connective-tissue one.

Mr. Arnold Lawson read a paper on the treatment of **corneal ulcers by quinine.** The object of the paper was to bring more prominently before the profession the great value of quinine in ulcerative affections of the cornea. Up to the present time its use in ophthalmology has been restricted to a very limited class of conjunctival and corneal affections; but the author's observations, which had extended over four years, showed that it

is a very powerful curative agent in a large variety of corneal ulcers, which are not amenable to ordinary routine treatment, and to which much more drastic measures are commonly applied.

The sulphate of quinine, dissolved carefully in just sufficient sulphuric acid to hold the salt in solution, is preferable to either the hydrochloride or the acid sulphate, both of which are soluble in water; and it is recommended to be used in a one-per-cent. solution.

The eye should be soaked in the solution for five minutes four or five times a day, and in addition a thorough irrigation daily by an undine filled with the solution is advised. It causes very little discomfort and patients use it readily, but stronger solutions give rise to pain and have no advantage.

When the treatment is going to be successful, improvement shows itself within a few days, and if no manifest benefit is effected within a week, it may be discontinued. The rapidity of healing under this treatment is at times remarkable, and the author has seen many formidable-looking ulcers heal by this treatment alone within a week. A list of several cases of corneal ulceration treated by this method within the last three years was appended to the paper.

Mr. Claud Worth read a paper on the **notation of prisms.** He said that when one orders a spherical or cylindrical lens one does not concern oneself with the refractive index of the glass of which it is made; one specifies that it shall have a certain definite effect upon a pencil of light, and bring it to a focus at a certain specified distance.

But prisms are numbered by most opticians according to the geometrical angle, so that if one wants a prism which shall deflect a pencil of light say 4°, one has to order a prism of 8° geometrical angle. The optician then supplies a prism whose actual deflecting power is somewhere between 3° and 5°, according to the kind of glass of which it is made. It is much more convenient and accurate to number a prism according to the number of degrees which it deflects a pencil of light.

Although this matter has been discussed before, yet he brought it forward in the hope that the Society would make some definite pronouncement which would be accepted by spectacle makers in this country and much inconvenience would thus be avoided.

Dr. D. J. Wood (Cape Town) first of all referred to a case of

detachment of the retina which he had recorded in volume xii. of the *Transactions*. He then described another case which he had recently seen which bore a strong likeness to the previous one.

The patient was a bucolic Dutchman, aged thirty-five, whose right eye had been lost five years before from a perforating ulcer, and the eye had been removed. Since that time the sight of the left had been failing, but had rapidly deteriorated during the last five weeks. His vision was P. L., and he could just see large objects moving below. The pupil was active and the tension was normal.

The ophthalmoscope showed two rounded detachments meeting and widening out above. The vitreous was clear, and one could just see below the disc, but the striking feature was the swelling and tortuosity of the vessels, and which at once recalled the former case to mind. The vessels were more than double their natural size and were tortuous to a degree. Both arteries were constricted at frequent intervals, so that the arteries looked like beads while the veins had the appearance of strings of sausages. The constricting bands were retinal in origin and looked as if they were stitches holding the vessels down. In both cases it was difficult to follow the vessels, not only on account of the tortuosity but also because the color of the arteries and veins was so similar. There were no recent hemorrhages, but some patches that were seen probably represented old ones. The question is whether it is a proliferation of inflammatory material in the retina or a primary disease of the vessels. Probably serous exudation caused detachment of the retina, but it is difficult to account for the lightness of color of the veins which was seen in both cases.

Mr. Louis Werner showed a sketch of a case of **neuro-retinitis** of a severe type which occurred in one eye of a girl aged twenty-four, who was anæmic. There was neither headache nor vomiting, the only symptom being a feeling of lassitude, etc., and for a time excessive thirst. There was no albumin present, but the sugar reaction was doubtful. The left eye failed suddenly one morning and the vision was reduced to hand movements. The field of vision was greatly contracted, but the color perception was good. The upper part of the disc was greatly swollen, with large corkscrew-like vessels spreading out from it, while the lower part was white and atrophic but indistinct. In less than

three days a perfect star of white lines appeared at the macula. Under iron the swelling disappeared in three months and the vision improved to $\frac{6}{36}$. The author referred to a case reported by Gowers in which retinal changes resembling those of albuminuric retinitis occurred in a chlorotic patient.

Dr. L. Cole-Baker showed an ingenious needle-holder for use with either straight or curved needles, and a modification of Clark's **eye speculum.**

Mr. Bishop Harman showed a case in which there was congenital absence of the **internal and external rectus muscles.**

Mr. Secker Walker showed a radiograph of a case of gunshot wound in which two shots had entered the eye at the same hole and had lodged at the back of the orbit.

THURSDAY, FEBRUARY 9, 1905. JOHN TWEEDY, F.R.C.S., PRESIDENT, IN THE CHAIR.

Mr. Edgar Stevenson read a paper on **exostosis of the orbit.** The patient was a girl, aged twenty-two, who was first seen on Nov. 20th last with proptosis, well marked downwards and outwards, in the left eye. This was first noticed six months previously, and its increase was rather rapid. She had no pain except an occasional neuralgic twinge, the eye movements were unimpaired, the vision was normal, and there was no diplopia. Under chloroform a small hard mass was felt lying under the outer and upper margin of the orbit.

On Dec. 10th the tumor was cut down upon and found to be much larger than was expected. It was attached to the inner angle of the orbit with its base in the frontal sinus, and it extended right across the roof of the orbit. A dense shell of bone covered cancellous tissue, so that two drills were broken in an attempt to get into it; however, a small piece was removed with a chisel and showed its structure. It was found that the attached base was not very broad, and with a pair of bone forceps it was wrenched away without difficulty. It is an irregular pear-shape, weighing 351 grains. It measures $1\frac{1}{2}''$ by $1\frac{3}{8}''$ by $\frac{7}{8}''$. The patient made an excellent recovery, and there is no eye affection whatever.

Mr. A. Ogilvy related notes of a case of a large **exostosis of the orbit.** The patient was a healthy man, aged twenty-four, with

no history of any ailment and with a good family history. He was first seen in November last complaining of epiphora, but on examination a large hard mass was felt in the orbit on the right side evidently attached to the nasal side. The tumor was causing myopia and some choroidal changes. Operation was performed on Jan. 1, 1905. The tumor turned out to have two pedicles and was very difficult to remove.

The patient made an interrupted recovery, but diplopia was present; this, however, passed off in two weeks.

The questions which this case raises are these: (1) What has to be done with his disorganized lachrymal apparatus? (2) Did the tumor cause the myopia which has now disappeared, the vision being normal? (3) Are these due to hereditary syphilis as stated by Charles Stedman Bull?

It is very curious that so large a tumor could exist in such a small space as the orbit without causing more damage and discomfort than it did.

Mr. WRAY read a paper on the **treatment of tobacco amblyopia.** He divided the cases into three groups: (1) Those with *amblyopia only.* (2) Those with *amblyopia* and *tachycardia*, and (3) those with *tachycardia only.* In view of the tendency to cardiac failure, the pulse should always be examined. He had recently seen cases in which the pulse ranged from 96 to 135, and patients suffering from tobacco poisoning should be warned that tachycardia might develop. The amblyopia usually disappears if taken early, but by all the recognized treatments recovery was a slow process. As regards the tachycardia, he had seen several cases in which it had persisted even after tobacco had been given up for years. He alluded to the toxic breath which was always present with amblyopia, but never when tachycardia was the sole symptom. He ascribed the amblyopia as probably due to saturation of the blood with tobacco alkaloids and the tachycardia as due to injury or destruction of the cardio-inhibitory neurons of the trachea and bronchi. He thought that bad teeth and a catarrhal condition of the alimentary and respiratory tracts aided the absorption of the poisons.

Being much dissatisfied with the orthodox treatment with pot. iod. and strychnine, and considering that nicotine was freely soluble in water, he had seen great and rapid improvement follow from the following treatment. The patients were directed to dress warm and drink a pint of water at 7 A.M. and walk

briskly for thirty minutes in the open air. Then to drink a second pint and go for a similar walk. Then rest for a few minutes and take breakfast. A third pint is to be taken in the middle of the morning, and a fourth in the middle of the afternoon. Some have even continued to smoke as much as one quarter ounce a day, and in three cases practically normal vision was restored in fourteen days.

As regards the effect of the water treatment on the heart, the author had not had the opportunity of trying it on the new cases he had lately seen, for this had not been a marked symptom in them, but unquestionably the accelerated beat he had noticed had not disappeared in the same way as the amblyopia.

There was considerable doubt as to the method in which nicotine was eliminated, but he thought that it was mostly by the kidneys, though the lungs and skin probably bear a share. The water treatment had the advantage of utilizing all three ways.

Messrs. E. Treacher-Collins and Rayner D. Batten read a paper on **neuro-fibroma of the eyeball and its appendages.** The case which formed the basis of this paper was a girl aged fourteen who had been under Mr. Batten's observation for three years. The right eye was buphthalmic with vision of $\frac{1}{60}$. There was also much hypertrophy of the upper lid. There was a doughy swelling over the right temporal fossa. The condition dated from birth. This unsightly eye was excised, together with a wedge-shaped piece of the upper lid. The microscopical condition of the lid showed it to be a case of congenital elephantiasis associated with plexiform neuroma.

The chief interest centres in the eye, for it is the fourth case recorded in which neuro-fibroma of the eyelid has been associated with a buphthalmic eyeball. This condition, however, does not seem to be due to fibromatosis of the ciliary nerve but to increase of tension due—as in another case recorded by Mr. Collins—to congenital adhesion of the root of the iris to the back of the cornea. The terminal nerves in the cornea were, however, thickened. The condition seen in the choroid has not before been noted. Throughout its structure was denser than normal, and in parts it was considerably thickened. It was chiefly composed of fibrous tissue, highly nucleated, with pigment cells present and very few blood-vessels. Numerous small oval bodies presented the appearance of enlarged nerve endings. By comparison with the other cases recorded, it was shown that all portions of the

ciliary nerves supplying the eye may be affected with congenital fibromatosis, and that the uveal tract, like the skin, may be affected with a general hyperplasia of its fibrous tissue, though the extent of the affection varies. In some only the terminal filaments and end organs are involved, and in others the larger trunks are also affected.

CLINICAL EVENING, THURSDAY, MARCH 9, 1905. JOHN TWEEDY, F.R.C.S., PRESIDENT, IN THE CHAIR.

Mr. EDGAR CHATTERTON showed a woman, aged thirty-eight, who had the inner canthi, caruncles, and innermost extremity of the lower palpebral conjunctivæ discolored and of a dark gray appearance. As far as she knew, this appearance had always been present. She had never had her lids treated with anything, neither had she any sign of old disease. Her occupation consisted of filling toy crackers with fulminate of silver, and she had done this work for years. Mr. Chatterton suggested that the silver salt had got into the eye and had caused the discoloration shown.

Mr. CHARLES BLAIR showed a case of **retinitis proliferans** in a woman aged fifty-nine. The vision of the left eye was suddenly lost six months ago. The right fundus showed changes suggestive of albuminuria with numerous retinal hemorrhages. The urine was, however, free from both albumin and sugar.

A most interesting case of **pemphigus of the conjunctiva** was exhibited by Mr. A. OGILVY, occurring in a farm laborer who for failing health went to Canada. Shortly after getting there he suffered from pemphigus, the attack lasting for six weeks. He remained well for six weeks and then returned to England, at which time he could see to read with ease. On the passage home he had another attack which was very severe. The eyes got rapidly worse and now the corneæ were seen to be opaque and the conjunctivæ were so shrunken that but little sac remained and the entropion was most troublesome. Lanoline applied to the eyes gave great relief.

Messrs. LAWSON and PARSONS showed a drawing of a case of **sarcoma of the choroid** which occurred in a man aged thirty-four. He had had a squint for two years and the sight of the right eye had been failing for a year. For three months a black swelling was seen on the sclerotic and this was increasing rapidly in size, and had much the appearance of a staphyloma. The

eye was blind and the lens opaque. The eye was removed and on section a large sarcoma was found which was thin and flat and not at all like the choroidal sarcoma that is commonly seen.

Mr. Parsons gave a lantern demonstration of some cases in which peculiar folds in the retina were found in certain eyes that had been examined pathologically.

Mr. Halliburton McMullen showed a child aged nine months who was brought on account of an **occasional upward deviation of the eye** which had been noticed directly after birth. On examination it was found that there was complete absence of downward rotation of the right eye; the movements in other directions were normal. On looking downwards the left eye fixes, while the right eye was rotated upwards and outwards and was slightly retracted; the eyelid at the same time became elevated and retracted. The inferior rectus and possibly also the superior oblique were defective.

A case of **peculiar changes in the optic disc, retina, and choroid** was shown by Mr. R. E. Bickerton, occurring in a patient aged fifteen. When first seen in July last he had well marked neuritis in the right eye with surrounding retinitis. The disc was now raised, it was of a bluish-white color and had a wool-like margin. There were also numerous fundus changes which were beautifully illustrated by ophthalmoscopic drawings.

Mr. Charles Wray showed a man who had improved considerably while under his treatment for **tobacco amblyopia.** This treatment he fully described at the last meeting of the Society. It consisted briefly of making such patients take brisk walks and drink large quantities of water.

Messrs. Ormond and McCash showed a man who had a **piece of metal embedded in the retina.**

Mr. R. R. Cruise showed a patient from whose eye he had **extracted a piece of metal with Haab's magnet** and in which some interesting fundus changes were present.

REPORT OF THE MEETINGS OF THE OPHTHALMOLOGICAL SECTION OF THE NEW YORK ACADEMY OF MEDICINE.

By Dr. H. W. WOOTTON, Secretary.

MONDAY, DECEMBER 19, 1904. THE PRESIDENT, DR. DUANE, IN THE CHAIR.

Dr. Briganti presented three patients upon whom he had operated for **trichiasis by the plastic method,** subsequently described in his paper, published in this number, page 246 of these Archives. Results were very good.

Dr. W. B. Marple presented a patient in whom a **foreign body in the vitreous had been localized** by means of the X-ray and had been subsequently removed. The foreign body had remained quiet for thirteen years. The eye was blind and the patient would not consent to its removal. The foreign body was removed with a magnet.

Dr. Marple also presented a case with a **persistent pupillary membrane** of unusual size in one eye. The other eye presented a coloboma of the iris.

Dr. H. W. Wooton and Dr. J. J. Thompson each presented a case of **ptosis** operated upon by the method of Hugo Wolff.

Dr. J. Wolff presented a case in which he had **removed the lens for high myopia.** Refraction O D $-$ 13 sp. $\bigcirc$ $-$ 1.50 cyl. O S $-$ 16 sp. $\bigcirc$ $-$ 1.50 cyl. $= \frac{15}{50}$. Fundus O D was normal. O S well-marked choroidal atrophy. The left lens was needled. Quick swelling succeeded, but on the third day patient was able to go to school. Eight days later there was so much swelling that a linear extraction was performed and about $\frac{2}{3}$ of the lens removed. The remainder was gradually absorbed. The patient now accepts a $+$ 1.50 cyl. with which his vision is

$\frac{15}{20}$, and without the cyl. the vision is $\frac{15}{30}$. This result was obtained without the needling of the posterior capsule.

Dr. Wolff also presented a case of **optic atrophy** with normal central vision, in which the discs were very white, the arteries very narrow, in a man of thirty years of age. There were no symptoms of nervous disease. History good. When seven years old he had had measles and after taking two or three doses of a certain medicine became totally blind and deaf. The character of this medicine was unknown. After two or three days he began to recover vision. Sight gradually improved. The diagnosis of atrophy was made two years later with a vision of $\frac{20}{60}$. Case improved under strychnine; now with a — cyl. the vision is normal. The field is restricted to 30 deg. for white and about 10 deg. for colors. The case is interesting in helping us to give a prognosis in some of these cases of drug amblyopia.

Dr. Meierhof presented two cases: **A case of detachment of retina with a large rent in the detached portion.** John K., baker, fifty-five years of age, complained of impaired vision in right eye for past three weeks. In the fellow eye vision was $\frac{20}{30}$, which when corrected with + 2.00 = $\frac{20}{20}$. His vision has grown worse within the last few days. The impaired vision was found to be due to a veil-like mass in the fundus presenting quite forward in the upper half of the eye, which, taken in connection with the fact that the tension was not reduced, gave rise to the thought of intraocular growth. One week after first seeing the patient, a large triangular rent was found in what was seen to be detached retina. The cause for this condition could not be ascertained. The history as to injury or disease was negative.

A case of retraction of globe with marked limitations of motility in both eyes.

A girl of seventeen years, stenographer, presented herself for correction of strabismus. Upon examination, it was found there was little or no power to rotate either eye outward or inward. The movements upward and downward were not so free as in the normal eye; however, when the left eye was screened the right became more active, so that there was increased power of convergence. With the left eye still screened, upon attempts of the right to rotate outward, the left eye sank into the orbit, presenting the appearance of retraction of the globe. But for this experiment, the case resembled somewhat a case of partial ophthalmoplegia externa. This condition has

apparently been present since birth. The history as to injury or disease is negative. The vision in each eye is $\frac{20}{20}$ with a low degree of hypermetropic astigmatism. There is exophoria of 8 degrees for distance and $1\frac{1}{2}$ degrees of hyperphoria. There is, however, stereoscopic vision.

In discussing the case illustrating the Hugo Wolff operation for ptosis, Dr. WEEKS stated that the result in one of the cases appeared to be perfect, and in the other an over-effect had been produced. In both cases the eyes could be closed however. He had not as yet performed this operation but would do so as soon as possible, for the cosmetic effect was good and the operation itself appeared to be easier than either the operation of Panas or of Gruening.

Dr. GRUENING thought the results were very good and it was a good thing to have several methods. The operation of Hugo Wolff undoubtedly increased the function of the muscle, whereas the removal of a piece of cartilage (his own operation) merely shortened the lid. He thought, however, the operation of removal of the cartilage would probably be advisable in some cases in which Hugo Wolff's operation would fail.

In the discussion of Dr. WOLFF's case in which the lens had been extracted for high myopia, Dr. BARNES stated that he would like to report a similar case with a very interesting result. A year ago he removed the right lens in a patient sixteen years of age by simple linear extraction. There was a little reaction, the remainder of the lens matter absorbing satisfactorily. Before operation with a $-$ 22 D, the vision was $\frac{20}{70}$; now with a weak cyl. $\frac{20}{30}$. Shortly after operating upon the first eye, he performed a simple linear extraction on the other eye, using a Lippincott irrigator. There was violent reaction, plastic iridocyclitis setting in with impaired projection. This subsided, however, and he operated upon the pupillary membrane remaining, making an incision on the temporal side with a keratome and insinuating a Graefe knife into the proximal side of the membrane, puncturing the same, and completing the section with the de Wecker scissors. In a few days, without any correction, the vision was $\frac{20}{30}$; before extraction it had been $\frac{20}{70}$ with a $-$ 22 D. The peculiarities of this case were as follows: She does not require a $+$ lens for reading at the near point as one would suppose to be necessary, being now hypermetropic. Also, she is cross-eyed, the strabismus having appeared since operation.

Dr. Linn Emerson also gave the history of a case of myopia upon which he had operated. The vision was so poor that the patient had to be led about the streets by her friends. Without correction, her vision was only equal to counting fingers at one foot. With a — 22 D it was $\frac{4}{200}$; extensive choroidal changes were present, and the patient stated vision was growing rapidly worse. Three years previously she had not been aware of any nearsightedness. The right eye was needled; three days later, linear extraction was performed, and six weeks later the posterior capsule was needled. Vision equalled $\frac{22}{100}$, with a + 3 sp. The ophthalmometer showed some astigmatism, but the cyl. did not improve the vision. The same procedure was performed on the left eye, which was considered her poorer eye. Visual result about the same as O D. However, the patient complained bitterly because she had lost the power of reading ordinary newspaper print, which could be read before at about two inches' distance. Now the best near correction enables her to read Jaeger No. 14 only. She has been able to take a situation and earn her living, which was impossible before the operation. The question arises, however, Was a repetition of the procedure justified on the second eye? Also, considering the rapid progress of the disease, how long would the ability to read Jaeger No. 1 at two inches have been retained, if the second eye had been untouched?

In the discussion of Dr. Wolff's case of **optic atrophy**, Dr. H. Knapp stated that a number of cases of white atrophy with good central vision were on record. Most of these cases were seen in children who had suffered from meningitis. He did not understand how this could be. He had seen a patient, thirty-four years old, with discs as white as chalk; one eye was perfectly blind, the other had perfect vision. This case had followed a meningitis. The fields were small.

Dr. Gruening thought Dr. Wolff's case might have been one of quinine amaurosis.

Dr. Fridenberg thought that Dr. Meierhof's case of detachment of the retina might be secondary detachment, due to bands in the vitreous, which had resulted from a previous hemorrhage. There were opacities in the vitreous.

Dr. Edward Coburn presented an instrument, devised by himself, for the photographic record of the ocular movements. (Described in full in these Archives, vol. xxxiv., No. 1.)

Dr. J. E. Weeks demonstrated the McKenzie-Davidson ap-

paratus for localizing foreign bodies in the eye by means of the X-ray, and spoke of the advantages of stereoscopic skiagraphy in this work.

Dr. Weeks regards the method as one of the most efficient, as well as the simplest, that has been devised. The value of the localization of foreign bodies was made manifest by the following case, which he reported :

Mr. C. O., adult, male, while chiselling iron, was struck in the centre of the cornea by a fragment, which passed through the cornea and crystalline lens into the vitreous chamber. The accident occurred Nov. 15, 1904, and, through the courtesy of Dr. Henry Wilson, of New Haven, the patient came to the New York Eye and Ear Infirmary, on Nov. 19th. The track of the foreign body could be determined, but the lens was opaque and the foreign body could not be seen. The patient was admitted to the Infirmary, and an attempt was made to remove the fragment by means of the giant magnet (Haab). The foreign body could not be brought into the anterior chamber either through the track of entrance or by drawing it past the equator of the lens, nor could the site of the foreign body be determined by any bulging of the sclera. Slight pain was elicited when the eye was approached to the magnet, indicating the presence of a magnetic body. Skiagraphs were taken, after the method of McKenzie-Davidson, by means of the X-ray apparatus at the Infirmary, and when the plates were developed the shadow of the foreign body was readily discerned. By means of the McKenzie-Davidson triangulation apparatus, the foreign body was found to be located in the lower part of the vitreous chamber, 9.5*mm* back of the anterior pole of the cornea and 1*mm* to the median side of the vertical plane of the globe. An opening was made through the sclera, midway between the insertion of the external and inferior recti muscles, and the vitreous chamber entered with the small point of the Hirschberg magnet, the point of the magnet passing exactly in the direction of the indicated site of the foreign body. On the third insertion, at which time the point was carried a little farther than on the two previous insertions, the foreign body became attached to the point of the magnet and was withdrawn. The wound in the episcleral tissue was closed by suture, and an uneventful recovery took place.

The foreign body measures 1 × 0.66 × 0.20*mm*, too small to

be influenced to any great degree by the magnet outside of the globe.

On account of the lateness of the hour, the reading of Dr. BRIGANTI'S paper was postponed until the next meeting.

MONDAY, JANUARY 16, 1905. THE PRESIDENT, DR. DUANE, IN THE CHAIR.

Dr. JOHN E. WEEKS presented two cases of **plastic surgery of the eyelids.**

CASE 1.—Miss F., aged six years. At the age of five months she was operated upon by Dr. W. T. Bull, for the removal of an angiocavernoma of the outer part of the left orbit and cheek. The cicatrix which followed produced total ectropion of the lower lid, the outer commissure being drawn outward and downward. Operation for restoration of the lid was performed November 17, 1904. The margin of the lid, orbicularis palpebrarum muscle, tarsus, and conjunctiva were included in the lid flap. The skin of the cheek was dissected away from the cicatricial tissue, so that the traction upon it was reduced to a minimum. The margins of the lids were freshened and united by sutures. The denuded area was made as large as possible by drawing the lids upward by traction on the sutures, the sutures being fastened to the forehead by means of adhesive strips. A piece of skin (Wolfe graft), measuring $4.5 \times 2.75cm$, was then removed from the inner surface of the arm, transferred to the denuded area, and sutured in position. Healing was uneventful.

Dr. Weeks stated that in his experience the shrinkage which always takes place in transplanted flaps ceases at the end of three to three and a half months, and it is his custom to permit the lids to remain united until this shrinkage ceases. In the patient presented the margins of the lids were still united. The prospects of a complete correction of the ectropion were very good.

CASE 2.—A young man of twenty-four years, upon whom Dr. Weeks had operated three and a half years previously for the restoration of the upper and lower cul-de-sacs in order that an artificial eye might be worn. In this case the outer third and the inner fourth of the margins of the lids had been destroyed and had grown together, and all that was left of the conjunctiva was an area measuring about $3\frac{1}{2} \times 7mm$. The destruction of the globe, conjunctiva, and margins of the lids was the result of the entrance of molten iron into the eye.

The operation for the restoration of the cul-de-sacs consisted in transferring a Wolfe flap from the inner surface of the arm to grooves, previously prepared, in the orbital tissue corresponding to the previous location of the cul-de-sacs. The flaps were anchored to the periosteum above and below, the operation being the same as that described by Dr. Weeks in the *Transactions of the Section on Ophthalmology*, A. M. A., 1902, page 69, and in the *Transactions* of the Tenth International Ophthalmological Congress which was held in Lucerne, 1904.

Dr. Weeks stated that he had, up to the present time, performed eleven consecutive successful operations of this kind.

Dr. J. M. Mills presented a case of **total aniridia.**

The patient, a girl of twelve, presented a typical bilateral, congenital total absence of the iris. There are six other children in the family; their eyes are without defect, and they are otherwise healthy. The patient, with the exception of an attack of measles, has been perfectly well. She has an oscillating nystagmus and the eyes are exceedingly sensitive to light; she holds her head down to prevent excessive entrance of light. According to Manz, the total absence of the iris is more frequent than the partial, and he states that in the older literature the anatomical description of the cases has been neglected. Irideremia partialis resembles somewhat coloboma of the iris, but its nature and development, Manz adds, are entirely different, and a partial and total irideremia may exist in the same patient, but a total aniridia and coloboma have not been seen together.

Rindfleisch, however, reports a case of total irideremia in one eye and coloboma of the iris in the other. The cornea in Dr. Mills's case was normal, though in other cases, he stated, changes of form and curvature have been mentioned, and also opacities of the cornea. The anterior chamber seemed very deep, but this was due to the absence of the iris and the opaque background produced by an anterior polar cataract. Congenital cataract is present in most cases, and in others cataracts develop later. In this case there is a bilateral anterior polar cataract, and striæ in the periphery. Capsular cataract occurs often and the lenses are sometimes partially or completely luxated. The etiology of the irideremia is indefinite. Heredity, as usual, is evident, though not in the case presented. Gutbier mentions a family in which absence of the iris showed in four successive generations. In regard to treatment, some improvement may

be effected with concave lenses; protective glasses or smoked glasses should be ordered, and stenopaic slits should be tried. When the lens becomes opaque, Gross suggests operation to prevent luxation. The case may be complicated by opacity of the cornea, opacities of the lens and vitreous, luxation of the lens; occasionally, though rarely, excavation of the papilla, and microphthalmos; and detachment of the retina has been observed in three cases. Ptosis and persistent hyaline artery were present in two cases.

Dr. Colman W. Cutler presented a specimen of **metastatic carcinoma of the ciliary body**, and a specimen showing **iridocyclitis following cataract extraction in a diabetic.**

A nurse, aged thirty-three, whose breast had been removed for cancer a year previously; mother and sister are said to have died of cancer.

Sept. 5, 1904.—Three weeks ago she began to suffer with pain in the left eye, top of head, and side of face. Four months previously the eye had been examined and was found to be normal. In three weeks after the beginning of the pain, the tumor became visible in the iris, the eye was injected, the pain became localized in the eye, and vision was impaired. The tumor increased steadily in size, and the pain became violent in spite of opiates, and for its relief the eye was removed. The pain became much less, but in a week a large mass was felt in the liver, and in a month she died with general carcinomatosis.

The tumor, microscopically, appeared as a yellowish-gray swelling, involving the root of the iris and half of its breadth; pupil was partially dilated, media clear, fundus normal.

On section the tumor appeared as a white elevation occupying the ciliary body on the temporal side, and extending into the iris an apparent distance of *3mm.* The base of the tumor in the horizontal plane of the globe measured *9mm*, extreme elevation *3mm.*

Microscopic section showed a growth composed of epithelioid cells beginning as a very thin layer just at the end of the choroid and origin of the ciliary body, the outer pigment layer intervening between the growth and the sclera. Passing forward, it invested the ciliary body and processes, the root of the iris, and Fontana's spaces. The stroma of the iris in the vicinity of the tumor was thickened considerably by the tumor cells which broke through its uveal layer into the posterior chamber near the root, and the cells were continued as a thin layer over the

anterior surface of the iris, and where thinnest had almost a columnar appearance. They also lined Descemet's membrane for some distance. The cells in the main portion of the growth had a tendency to glandular or tubular arrangement. The rest of the eye was normal.

The diagnosis is **metastatic adenocarcinoma of the ciliary body and iris.**

Iridocyclitis following cataract extraction in a diabetic. The specimen showed an annular detachment of the ciliary body. The iridocyclitis had developed rapidly, beginning on the fourth day after the operation, which had been successfully performed without loss of vitreous or prolapse of the iris. Several months later the eye was removed, and at a later period the lens was removed from the other eye after a preliminary iridectomy and normal vision was obtained. The infection seemed to be from the wound, but the question arises whether the eye would have suffered if the patient had not had diabetes.

In the discussion that followed, Dr. J. L. Barnes, referring to Dr. Cutler's second specimen, stated that in a patient who was suffering from diabetes he had extracted the cataract from one eye with success, but in the subsequent extraction of the cataract from the other eye the latter was lost by a post-operative iridocyclitis.

Dr. Pooley had seen a case of conglomerate tubercle of the ciliary body closely resembling carcinoma of the ciliary body microscopically.

Dr. J. H. Claiborne looked upon some redness after a cataract extraction as normal, and regarded a white eye as one likely to turn out badly.

Dr. Seabrook thought a dry eye was unfavorable and preferred a little redness to whiteness with dryness.

Dr. P. Briganti read a paper entitled **the transplantation method for the treatment of trichiasis, and new instruments for the operation.** (Published in this number, p. 246.)

Scimemi's margino-plastica (1) consisted in an incision at the margin of the lid, as long as the trichiasis required, making a thin flap from the outer surface of the lip, connecting the marginal incision with the skin wound (resulting from the dissecting of the flap) by means of two vertical cuts through the ciliary border, shifting of the flap in the marginal incision, suturing of the skin wound.

Sgrosso (2) abolished the vertical cuts and rolled the flap over the lashes into the marginal incision, cutting off the bridge-like portion after the flap was attached.

Dr. BRIGANTI's modification consisted in prolonging the marginal incision in a straight line so as to meet the skin wound at a very small angle out of the ciliary border, in order to improve the cosmetic result of the operation. Moreover, by employing the newly devised instruments, the marginal incision can be made very regular and uniformly deep, and the flap evenly shaped from 1 to *2mm* in width, and hemorrhage is easily controlled.

The instruments are: (1) Marginal forceps right and left; (2) flap forceps in two models.

Vaseline dressing is used after the operation and repeated every day for about six or seven days. No serious accidents have ever occurred. The objection raised against this operation, that hairs overgrow on the newly formed margin and require depilation as badly as the trichiasis itself, has no great value. Hairs rarely overgrow, and when they do they can be depilated right from the follicle once for all. The effect of the operation is permanent.

Dr. SEABROOK thought that for incomplete trichiasis, say, not involving more than half the lid, particularly if the centre of the lid was not affected, Dr. Briganti's operation gave good results.

Dr. WEEKS thought Dr. Briganti's modification better than the original operation with no pedicle to the flap. A flap from the back of the ear was excellent and also one from the mucous membrane of the lip. He had had no trouble from the growth of hair from any flaps transplanted. Flaps from mucous membrane produced irritation. When the cartilage is greatly involved, Streatfeild's operation must be added to Dr. Briganti's.

Dr. BRIGANTI thought that the operation could be repeated if the first attempt should prove unsatisfactory, for the skin flaps were very small and not much skin was required.

Dr. J. H. CLAIBORNE read the report of a case of **poisoning by salicylate of sodium with quadrant hemianopsia.**

A large, short-necked man, fifty-seven years of age, of free habits, was seen July, 1904. He complained of some ill-defined obscuration of vision which had not been relieved by glasses. His vision for distance and near had been found to be normal with correction. Two months before Dr. Claiborne saw him he had drunk champagne to excess, a common state of affairs with

him periodically. The last periodical indulgence had lasted about a week, and was followed by indefinite pains in the head, arm, and leg, which were considered to be rheumatic, and for which he received a large dose of salicylate of soda, which was followed by tinnitus. Twenty-four hours afterwards his vision became very misty with a dark spot toward the left. The salicylate was reduced to one half the dose but no clearing in vision was perceptible. It was then entirely discontinued. Within a week, vision was apparently normal except for the indefinite blur already referred to. The patient stated that when the blur came on it was much denser to his left, and persisted in that region after the right side had cleared, and that during the general obscuration the dark spot referred to appeared on the left side. There was no history of syphilis, and urinary analyses were negative. The retinal veins in each eye seemed a trifle large; the arteries were normal, disc normal, and rest of the fundus normal. No sign of external disease; orthophoria. Central color-perception normal; pupillary reactions normal; left grip weak; left knee-jerk exaggerated. No ataxic symptoms. The fields of vision in the two eyes constitute the interest in this case. The extent of the field for form is about normal, but downward and to the left in each eye, almost mathematically symmetrical, is a scotoma which is absolute and which represents a triangle. In the right eye, the three points marked on the base were at 35 deg., and the sides ran clear and straight to the apex at the centre. In the left eye almost the same thing occurred, only the points in the horizontal plane marking the limits of the scotoma were at 30 deg. instead of 35 deg. This was frequently tested to avoid error, but repeated trials proved that it was correct. It will be observed, too, that there was vision from the base of the triangle out to the periphery. The scotomata are consistent with the fact that the obscuration of vision was mainly toward the left, and is probably the dark spot originally observed by the patient. This position will also account for the fact that the vision in the left eye was not quite so good as in the right. The fields for red and green are almost, if not quite, as interesting as that for form. For red, in the right eye, it is distinctly erratic and irregular. Downward and to the left, there is wanting a quadrant of 90 deg. In the left eye, the field is still more contracted and erratic, but the temporal limit is naturally greater than the nasal in the right eye. There is here

also a quadrantal defect of 90 deg. But there is along the sector nearest to the vertical an islet of 20 deg. in which red was distinctly recognized. A very careful trial proved this fact, and likewise the fact that it existed nowhere else in the red-blind area. The field for green is quite as interesting. In the right eye, the green-blind area involves the right half of the field below to the extent of 30 deg.; also the upper half to the extent of 30 deg., so that its defect is not, strictly speaking, quadrantal. In the left eye, the green-blind area involves the right field 30 deg. below, but remains at the horizontal limit to the left, as in the field for green. Also, there is found along the same sector as in the field for red an islet of vision for green. It differs, however, very slightly in length. As has been observed, the color-perception for red and green seems normal. It can readily be understood how this might be the case in the right eye, but it would appear reasonable that it should be slightly modified in the left eye, even as the central vision for form was, and in all probability it was.

But, in the nature of things, it was not sufficiently striking for the patient to make the comparison. Dr. Claiborne had been unable to find similar fields for form or colors, and had never before seen a symmetrical form scotoma in a quadrantal scotoma for colors in which the form scotoma was smaller than the color scotoma. He believed that this was the first observation that had been made on the color field following salicylate of soda intoxication. It may be objected that it may not have been a clear salicylate intoxication case, since the size of the dose was not exactly known and since the patient had been previously indulging in champagne for a week. Careful questioning, however, showed that whatever the amount of salicylate was, it was sufficient to produce general symptoms of intoxication. The similarity of intoxication by the salicylate of soda to that induced by quinine had been often noted. As to the contributory intoxication from champagne, the patient was not an habitual drunkard, but periodically became intoxicated, and he always drank champagne but never very heavily. He was always capable of attending to his business during one of these periods, and they never degenerated into a debauch. The location of the lesion is interesting as a matter of speculation. It was probably not at the base, since other nerves were not involved. Probably not sub-cortical or in the capsule, since there was no history of hemi-

plegia and hemianæsthesia. The weak grip and the exaggerated knee-jerk on the left side he believed were entitled to little consideration. He believed the lesion was in the cuneus. To apply the term hemianopsia to a case exhibiting fields like this was obviously incorrect; the proper name would be homonymous left-sided inferior tetranopsia.

Dr. DUANE had seen the retention of an islet in the field in a case of quinine amblyopia.

Dr. WEEKS had seen a case in which quadrant hemianopsia did not exist for form but was complete for colors. He had seen no fields like those described by Dr. Claiborne in quinine amblyopia. Salicylic acid and salts produced toxic amblyopia resembling that produced by quinine. He thought that Dr. Claiborne's case might very likely be due to cortical lesion without being connected in any way with the use of the salicylates.

Dr. CLAIBORNE agreed that the symptoms might be produced by cortical lesion, but had occurred suddenly, accompanied by other symptoms of salicylate intoxication. He reported the case of course as "post hoc." He thought it quite possible that a cerebral hemorrhage might have occurred, and this might have been due to the over-dose of the salicylates.

MONDAY, FEBRUARY 20, 1905. THE PRESIDENT, DR. W. B. MARPLE, IN THE CHAIR.

Dr. A. WIENER read a report of a case in which a **wood splinter, after remaining ten weeks in the anterior chamber, becoming encapsuled and setting up an iritis, had been successfully removed.**

The patient was a man of seventy years, and while chopping wood a large piece of it suddenly struck him in the left eye, which caused some pain, but this passed off in a few hours. The eye becoming red and painful some days later, he presented himself at the Outdoor Department of St. Luke's Hospital. His condition was as follows: The vision of the left eye equalled fingers at eight feet and was not improved by glasses. The patient was highly myopic, and ophthalmoscopic examination showed annular staphyloma in both eyes and also double senile cataract. The pupillary edge of the left was firmly glued to the lens at its inner, upper, and outer edge. Below, and slightly toward the inner side, it was drawn toward the lower portion of the cornea, where it appeared to be adherent just

behind a corneal infiltration. The corneal infiltration was of a reddish-gray color, showing, when looked at with a strong magnifying glass, small capillary blood-vessels. There was marked ciliary injection. No conjunctival secretion; tension normal. Just to the inner side of the corneal infiltration was a yellowish-looking mass about the size of a bird-seed lying in the anterior chamber. Pain intense. At the attempt to remove the cyst, a downward corneal section was made with a Graefe knife. Unfortunately the sac was opened. It collapsed immediately and disappeared. Within twenty-four hours the anterior chamber was restored and the sac was seen lying across the pupil. After another twenty-four hours, a successful attempt was made with the lance. Recovery uneventful. No pain since. Two weeks after the removal of the splinter, the eye had assumed its normal appearance with the exception of a small macula corneæ; V O S $\frac{20}{40}$ with — 7.5 sp.

There is still an adherent leucoma and the iris remains glued to the lens. The cyst, on minute examination, contained a number of foreign particles which proved to be wood.

A case of retraction movement of the eyeball presented by Dr. SCHAPRINGER was demonstrated by Dr. Duane in Dr. Schapringer's absence:

The power of abduction was almost complete. When the eye was adducted it went almost straight up. Adduction was accompanied by retraction. There was the usual narrowing of the fissure on adduction.

Dr. J. E. WEEKS stated that these cases differed in their movement during attempted adduction. If adduction were attempted a little below the horizontal line, the retraction would be downward; if slightly above, the eye went up; in the horizontal plane it went very slightly up. The retraction in Dr. Schapringer's case was very slight.

Dr. DUANE thought Dr. Weeks's statement held good for some cases but not for the majority. The substitutive movement in adduction was generally upward.

Dr. MARPLE presented a case of **epibulbar epithelioma.**

John H., aged sixty-five, right eye. Twenty-five years ago he was struck in this eye by a piece of iron while he was chiselling an iron pipe with a hammer. Sight was not so good afterwards, and he was treated for some time in our city dispensaries. Eight or nine years ago he had a growth on the same eye, which

was seen by Dr. Knapp, who pronounced it to be a papilloma, and removed it. A recurrence necessitated a second removal a year later; again recurring, it was removed a third time a few months subsequent to the second operation. This last operation was six or more years ago. The vision was reduced to P. L. About six months ago the eye became red again. The cornea was then more or less hazy, with a reddish growth almost all around the cornea. A small piece examined with the microscope proved to be an epithelioma. The vision in this eye is movements of the hand at two feet. The epithelioma encroaches over the corneal limbus below and to the temporal side.

In the discussion of Dr. Marple's case, Dr. SWEET, of Philadelphia, stated that he had used the X-ray a number of times in cases in which the globe was involved secondarily from the lid, and with general improvement. In Dr. Marple's case, although there was no involvement of the lid, he would employ the X-ray.

Dr. C. KOLLER had treated a case of epithelioma by the X-ray with no influence whatever upon the epithelioma, but with no injury to the vision. The globe was subsequently enucleated.

Dr. G. S. DIXON presented a model of a new **bifocal glass.** The near lens was on a hinge which ran horizontally, from the edge, through the centre of the distance lens so that the former could be turned up and down, and this was particularly serviceable when a presbyope had to regard near points above the horizontal line.

Dr. H. KNAPP stated that the ordinary bifocal glasses were perfectly satisfactory as far as he was concerned. When the paster was sunk between the two lenses (Borsch), vision was not so clear. Optically the best bifocal glasses were those ground on one piece of glass, on which no paster was employed (Mundorff). They were easily cleaned, and the prismatic effect at the junction of the near and distant segments was reduced to a minimum.

Dr. E. L. OATMAN reported a case of **annular scleritis.** The clinical history, furnished by Dr. ROOSA, was as follows: Male, aged fifty-four, in good health, with no history of gout, rheumatism, tuberculosis, or syphilis. His refraction was O D — 8. D, O S — 4.5 D. There was no disease of the left eye. Glaucoma, with persistent high tension, appeared in the right eye. The disease advanced to total blindness and the formation of staphyloma on the temporal side of the sclera, with

neither pain nor external signs of inflammation. Two weeks before enucleation, he received a severe blow on his right eye and temple. This was followed by intense pain and lachrymation. There was now deep circumcorneal congestion, chemosis, and infiltration of the corneal periphery. The staphyloma was much larger. Both eyeball and staphyloma were soft and fluctuating. An unusual depth of the anterior chamber had developed.

Dr. OATMAN'S report of the pathological examination is as follows: Pathological changes attributable to myopia and glaucoma are not discussed. The anterior region of the sclera and episclera is occupied by a dense cellular deposit, which completely encircles and invades the cornea. It extends backward about 10*mm* on the temporal and 4*mm* on the nasal side. There are areas where the deposit occupies more than one third of the external scleral substance, which it has supplanted. The deposit is a highly vascularized accumulation of small round cells of lymphoid type. It develops along the anterior ciliary system of blood-vessels, which are degenerated.

There is a large deposit in the tendon of the external-rectus muscle at its junction with the sclera. The sheaths of the tendon and surrounding tissues are greatly distended by serous effusion. The protuberance thus formed, in connection with an underlying ectasis of the sclera, constituted the staphyloma observed clinically. At this point is a complete rupture of the sclera. A communication is thus established between the interior of the eye and the external protuberance. This explains the extreme flaccidity of both, as described in the clinical history. Many of the phenomena observed are attributable to obstruction of the anterior ciliary circulation. Among others is a large sero-fibrinous effusion into the anterior chamber, which caused great backward displacement of the iris and ciliary body, and rupture of adhesions which had formed between the iris and cornea at the filtration angle.

Pathological changes observed in the nerves distributed to the region affected with scleritis are considered to be of the highest interest, suggesting that this case of scleritis may be a reflex or trophic disturbance. In the cellular deposits and subconjunctival tissue, the nerves are in an advanced stage of proliferative interstitial neuritis. There is great thickening of the nerve sheath, and hyperplasia of neuroglia tissue. Nerves are found in which axis-cylinders and medullary sheaths have

been entirely replaced by fibrous tissue. These changes are confined to the ophthalmic branches of the fifth nerve, the ciliary nerves not being affected. That the nerve degeneration is not a result of the scleritis, but preceded it, is indicated by the following facts: (1) The scleral changes belong to the early stage of a plastic inflammation. (2) In the nerves, formative inflammation is very far advanced. (3) The scleritis proceeded to staphyloma formation without pain; the late pain which followed the blow was probably due to detachment of the ciliary body by effusion. (4) Degenerated nerves were found in the subconjunctival tissue, apart from the cellular deposits. The theory that some cases of annular scleritis may be trophic, dependent on sensory-nerve or ganglionic degeneration, explains many puzzling features of this disease, such as its apparent dependence on some chronic eye-disease, usually glaucoma; origin in the episclera; invariable limitation to the anterior half of the globe; frequent absence of pain until the uvea is involved, and absence of pathognomonic tissue changes.

Attention is called to the fact that the ophthalmic branch of the fifth nerve has anatomical connections with the cavernous plexus of the sympathetic, which distributes nerves to the anterior ciliary vessels, around the branches of which the cellular deposits of annular scleritis always occur.

Dr. W. M. Sweet, of Philadelphia, read a paper entitled **the advantages of Roentgen-ray diagnosis in ocular injuries from foreign bodies, with demonstration of method of localization.**

The method of localization resembled that of McKenzie-Davidson, except that the plate was attached to the patient's head, and instead of having a control object affixed to the eyelid, two bulbous points were used which were attached to the instrument. The plotting apparatus of the McKenzie-Davidson instrument was not employed, the localization being worked out upon a chart.

Dr. Gruening thought that in New York it was impossible to make such accurate localizations as Dr. Sweet did in Philadelphia; here we were still in our apprenticeship.

Dr. Weeks pointed out the difference between Dr. Sweet's method and that of McKenzie-Davidson; there were possibilities of error, and we must know what these are before we can hope for accurate results. But errors, for instance, were possible through the movement of the eye, and in the McKenzie-Davidson

apparatus we must know from what point in the tube the rays emanate.

Dr. Sweet's method was the superior in that two fixed points were employed, and in that one did not have to know the point from which the rays emanated; otherwise there was no difference.

The Webster-Fox method was imperfect, because the wire used as a control object was placed in the conjunctival sac and might cover the position of a foreign body.

Dr. FRIDENBERG had obtained perfect results with Dr. Smith's apparatus, using a skull and paraffin eye. He knew of a case in which a failure had resulted. This was probably on account of the plate not being parallel to the vertical plane of the head, but we do not as yet know all the possible sources of error.

Dr. DIXON stated that his experience had not been satisfactory, but his measurements had been faulty. He had used the McKenzie-Davidson apparatus and did not think it as simple as described.

Dr. HERMAN KNAPP spoke of the removal of foreign bodies without the X-ray localization. He had removed the smallest objects removed with the Haab magnet, using Hirschberg's sideroscope, or even without it. In the majority of cases the foreign body could be brought to the posterior surface of the lens, then led around the equator, whereupon the iris could be seen to bulge. The traction line of the magnet had to be directed very accurately in order to avoid the ciliary body. When the foreign body appeared in the posterior chamber, and would not come into the anterior, the incision into the cornea and iris should be made with a small knife at right angles to the surface of the cornea, then the body will come out without trouble. If made with the keratome in the ordinary way, the incision would be closed by the intraocular tension pressing the inner lip of the wound against the outer.

Dr. SWEET, in closing, stated that in Philadelphia the method had proven to be absolutely accurate, although there was a liability to error. With glass, of course, the exposure should be shorter than with steel. He thought that Dr. McKenzie-Davidson had developed the stereoscopic method perfectly, and he thought it accurate, but the McKenzie-Davidson method and his own were more accurate.

The reading of Dr. DUANE'S paper, entitled **unilateral and other unusual forms of nystagmus,** was deferred until the next meeting.

SYSTEMATIC REPORT ON THE PROGRESS OF OPHTHALMOLOGY IN THE FIRST QUARTER OF THE YEAR 1904.

By Dr. G. ABELSDORFF, in Berlin ; Prof. ST. BERNHEIMER, in Innsbruck; Dr. O. BRECHT, Prof. R. GREEFF, Prof. C. HORSTMANN, and Dr. R. SCHWEIGGER, in Berlin ; with the Assistance of Prof. A. ALLING, New Haven ; Prof. E. BERGER, Paris ; Prof. CIRINCIONE, Genoa ; Dr. DALÉN, Stockholm ; Prof. HIRSCHMANN, Charcow ; Dr. J. JITTA, Amsterdam ; Mr. C. DEVEREUX MARSHALL, London ; Dr. H. MEYER, Brandenburg ; Dr. P. VON MITTELSTÄDT, Metz ; Dr. H. SCHULZ, Berlin ; Prof. DA GAMA PINTO, Lisbon ; and Others.

Translated by Dr. MATTHIAS LANCKTON FOSTER.

Sections I.–III. Reviewed by PROF. C. HORSTMANN, Berlin.

I.—GENERAL OPHTHALMOLOGICAL LITERATURE.

1. **Landolt.** The methods of examination. *Graefe-Saemisch*, 2d edition. Leipsic : Engelmann, 1904.

2. **Wilbrand** and **Saenger.** *The Neurology of the Eye*, third part. *Anatomy and Physiology of the Optic Paths and Centres.* Wiesbaden : J. F. Bergmann.

3. **Schwarz.** *Encyclopædia of Ophthalmology*, section 10. Leipsic : C. W. Vogel, 1904.

4. **Haab.** *Atlas and Outline of Ophthalmology*, vol. iii. Operations. *Lehmann's Hand Atlases*, vol. xxxi. Munich : Lehmann, 1904.

5. **Koster-Gzn.** Optotypes for determining the vision of myopes at the punctum remotum. *Ned. Tyds. v. Geneesk.*, 1904, 1, No. 12.

6. **de Britto.** Ophthalmic notes. *Arch. d'opht.*, xxiv., 3, p. 137.

7. **Truc, Delord,** and **Chavernac.** New researches on the ocular stigmata of criminals. Examination of prisoners at Nîmes. *Ann. d'ocul.*, cxxxi., p. 53.

8. **Abelsdorff.** The relations of marriage to eye-diseases, with special reference to heredity. *Disease and Marriage*, 1904 (a discussion of the affections).

9. **De Schweinitz.** Ophthalmic memoranda. *Ophth. Record*, Jan., 1904.

The 72–74th fascicles of the new *Graefe-Saemisch* contain the conclusion of LANDOLT'S (1) methods of examination. Wick discusses simulated blindness and poor vision; Langenhalm, tonometry and localization of foreign bodies in the eye; Landolt, the investigation of the movements of the eye; and Heddaeus, the semiology of the pupillary reaction.

The third volume of WILBRAND and SAENGER'S (2) *The Neurology of the Eye* contains a description of the anatomy and a discussion of the physiology of the optic pathways and centres.

The 10th fascicle of SCHWARZ'S (3) *Encyclopædia of Ophthalmology* contains articles in alphabetical order from hysteria to coloboma (spelled with a *k*).

The appearance of HAAB'S (4) *Atlas* and principles of operations on the eye is very welcome. It presents its subject in a brief, understandable form, rendered absolutely clear by the accompanying plates. The low price renders it possible that it may obtain a very large circulation.

KOSTER-GZN (5) has sought to make optotypes by means of which the visual acuteness could be ascertained at a distance of 5*cm*, so that the vision of a myope of 20 D could be determined at his punctum remotum. The optotypes are very small, their height not over 0.075*mm*.

TRUC, DELORD, and CHAVERNAC (7) investigated the eyes of 566 male criminals, in search of data to confirm or refute the theory that disturbances of the color-sense and contractions of the visual fields are to be considered characteristic signs of degeneration in criminals. Colors were confounded in only a few cases. A case of apparently total color-blindness was probably simulated. No central scotomata for colors were found. The visual field was contracted in only 8 cases. The pseudo-hemianopic contraction of the field, described by Ottolenghi, was present in only 2 cases. The other ocular anomalies, such as 2.72 % of strabismus, showed nothing characteristic of the eyes of criminals.

ABELSDORFF (8) mentions first the albuminuric retinitis of pregnancy which sometimes seriously endangers vision. During labor, hemorrhages may be caused by severe straining. Metrorrhagia may cause disturbances which result in either a temporary loss of vision or in optic atrophy. During the puerperium and lactation, aside from the metastatic ophthalmia and septic

retinitis of puerperal fever, a primary neuritis is met with which usually ends in recovery. The eyes of the child may suffer from ophthalmia neonatorum, or from injuries during birth, most often from retinal hemorrhages, which usually disappear and leave not a trace behind. Among congenital troubles are mentioned the disposition to myopia, congenital opacities of the cornea, which are usually caused by fœtal keratitis, irideremia, colobomata of the iris and of the choroid, ectopia lentis, and cataract. Among the diseases dependent on heredity were mentioned retinitis pigmentosa, glioma of the retina, amaurotic family idiocy, optic neuritis, glaucoma, hydrophthalmos, nystagmus, faults of motility, night-blindness, and color-blindness. Microphthalmos and anophthalmos are congenital. There is no probability that congenital eye-diseases tend to produce faulty development of the eye in posterity.

Cases reported by De Schweinitz (9) are as follows: Case 1. Symmetrical dislocation of the crystalline lenses into the pupillary areas. The lenses were displaced forward in such a manner that the pupillary edge of the iris encircled the equator of the lens. The eyes were highly myopic. Discission was ineffectual on account of the tough consistence of the lenses. Case 2. Posterior lenticonus of the left eye. The refraction through the cone was myopia about — 15 D. Through the periphery it was hypermetropic. Alling.

II.—GENERAL PATHOLOGY, DIAGNOSIS, AND THERAPEUTICS.

10. **van Duyse.** General etiology of ocular malformations. *Arch. d'ophtalm.*, xxiv., 2, p. 68.

11. **Kuwahara.** Experimental and clinical studies on the action of aniline colors in the eye. *Arch. f. Augenheilk.*, xlix., p. 157.

12. **Natanson.** Injuries of the eye by objects containing aniline material. *Zeitsch. f. Augenheilk.*, xi., p. 311.

13. **Ricchi.** Anatomo-pathological studies of the effects produced by the introduction of iodoform into the anterior chamber. *Arch. d'ophtalm.*, xxiv., 1, p. 25.

14. **zur Nedden.** Müller's trachoma bacillus and the influenza bacillus. *Klin. Monatsbl. f. Augenheilk.*, xlii., p. 47.

15. **McNab, A.** The diplobacillus liquefaciens of Petit and its relation to Morax-Axenfeld's diplobacillus of blepharoconjunctivitis. *Klin. Monatsbl. f. Augenheilk.*, xlii., p. 54.

16. **Leber, Th.** The action of certain micro-organisms in producing inflammation in the eye and in other parts of the body, with reference to the origin of sympathetic ophthalmia. *Arch. f. Ophthalm.*, lviii., p. 324.

17. **Denig.** Injuries of the eye with ammonia. *Zeitsch. f. Augenheilk.*, xi., p. 308.

18. **Greeff, R.** Radium rays and their action on healthy and blind eyes. *Deutsche med. Wochenschr.*, 1904, p. 452.

19. **Pick, A.** The localizing diagnostic significance of so-called hemianopic hallucinations, with remarks on bitemporal scintillating scotomata. *Amer. Jour. Med. Sci.*, Jan., 1904.

In the explanation of congenital malformations of the eye, it should always be considered, as VAN DUYSE (10) points out, whether the determining influence acted during the first two months or the later period of fœtal life. In the former, are produced the true malformations, usually due to pathological changes of the amnion or of the maternal organism; in the latter, occur pathological changes. Causes are heredity, trauma, infection, and action of toxines. The embryonal period produces chiefly anophthalmos, coloboma with microphthalmos, colobomatous cysts, cyclopia, and the epi- and peri-bulbar dermoids. The fœtal period produces diseases of the uvea, corneal opacities, hydrophthalmos, some forms of micro- and anophthalmos, and colobomata of the lids.

KUWAHARA (11) observed purulent conjunctivitis in three cases in which particles of color pencils had lodged in the conjunctival sac. He demonstrated by experiments on rabbits that certain aniline color materials could be very injurious to the eye. In mild cases the lids were less involved, in more severe inflammation much swollen. The conjunctiva was always inflamed and often became necrosed. Usually there was inflammation of the cornea, in mild cases there was only a slight haziness, which eventually passed away, but in other cases it was more dense, covered the entire extent of the cornea, and resulted in the formation of exudates, with thickening and swelling of the tissue. Ulceration was not frequent, but often there were abscesses in the neighborhood of the limbus. The inflammation of the iris and ciliary body caused a marked formation of exudate, sometimes with hemorrhages in the aqueous and vitreous. Frequently there was a round-cell infiltration at the root of the iris. In severe cases the lens became cataractous.

NATANSON (12) observed a dark violet discoloration of the conjunctiva in a six-year-old boy, whose left eye had been injured by the broken point of an aniline pencil. The point of the pencil was removed after two days, and the discoloration and irritation

then disappeared at the end of three days. A boy of eighteen got a particle of dry hectograph color in his eye, which caused a violet stain of the conjunctiva. The foreign body was removed.

According to RICCHI (13), the introduction of iodoform into the anterior chamber caused a loosening of the endothelium of the cornea at the point of contact. This is traumatic, because the same thing occurs after introduction of rods of gelatine. A distinct action of iodoform was a fibrinous exudation at the places uncovered by endothelium, and an infiltration of leucocytes between and in the endothelial cells at the bottom of the anterior chamber where the iodoform had become massed.

ZUR NEDDEN (14) considers that Müller's trachoma bacillus may be identical with the influenza bacillus.

According to MCNAB (15), Petit's bacillus is usually rather shorter than Morax-Axenfeld's. A differential-diagnostic point is the growth in simple agar, which is quickly and easily liquefied by Petit's, but only to a limited degree by the other bacillus. The attempt to inoculate bouillon from ordinary agar is always unsuccessful with the Morax-Axenfeld bacillus, but successful with the Petit. The ability to grow in and to liquefy gelatine is possessed by Petit's bacillus only in the first generation after inoculation from the conjunctiva. It is pathogenic only in the conjunctival sac.

LEBER (16) declares that no proof has as yet been adduced, in opposition to Ulbrich, that there are certain saprophytic organisms which by direct introduction seem to produce exclusively inflammation of the eye.

DENIG (17) describes four cases of injury of the eye with fluid ammonia, two of which ran an unfortunate course. In one a large leucoma of the cornea was produced, in the other the eye was blinded, with flattening of the cornea and lowered tension. The eye can be injured by either fluid or gaseous ammonia. In recent injuries with fluid ammonia he recommends that the eye be immediately irrigated with water and then a solution of magnesia be instilled.

According to GREEFF (18), there is not at the present time the least hope for the blind in radium. London made mistakes in that he did not previously investigate the vision of the eyes accurately and that he made no control experiments.

It was formerly held that scintillating scotomata and hallucina-

tions in the hemianopic field of vision were evidence of a lesion in the occipital cortex. Jolly, Uhthoff, and others have shown that these phenomena may originate in the primary optic tracts. PICK (19) adds further evidence to this theory by citation of four cases of hallucinations in the hemianopic field in which, although the confirmation of autopsy was not obtained, associated symptoms pointed to location in the optic tracts. One case of bitemporal hemianopic scintillating scotoma, which he regards as functional in nature, adds further proof of this theory.

ALLING.

III.—INSTRUMENTS AND REMEDIES.

20. **Fortunati, A.** A new acetylene lamp for ophthalmic use. *Ann. di Ottalm.*, 1904, Nos. 1–2.

FORTUNATI'S (20) apparatus consists of an acetylene gas generator and a peculiar lamp furnished with a concave, nickel-plated reflector and a convex lens of 20 D. The lens and reflector form a single piece, which can be bent 45°, so that the lamp may be easily and satisfactorily placed in different positions to illuminate the eye.

Sections IV.–VII. Reviewed by DR. G. ABELSDORFF, Berlin.

IV.—ANATOMY.

21. **De Vries, M.** A malformation of the human eye (coloboma of the iris, cataract, cords and vessels in the vitreous). *Arch. f. Ophthalm.*, lvii., p. 544.

22. **Monesi, L.** The morphology of the fœtal lachrymal passage in man. *Klin. Monatsbl. f. Augenheilk.*, xlii., 1, p. 1.

23. **Laqueur.** The location in the human brain of the centre of the macula lutea. *Virchow's Archiv*, clxxv., p. 404.

24. **Bulschowsky, M.,** and **Pollock, B.** The innervation of the mammalian eye. *Neurol. Centralbl.*, 1904, p. 387.

(Preliminary article on the use of Bulschowsky's silver impregnation in the study of the course of the nerve fibres in the tissue of the eye.)

25. **Opin.** Some technical points relative to the examination of the optic nerve by Marchi's method. *Arch. d'opht.*, xxiv., No. 1, p. 38.

26. **Verhoeff, F. H.** Some remarks on the use of Mallory's phosphotungstic acid hæmatoxylin, and a note on the musculus papillæ optici of Nicolai. *Royal London Ophthalmic Hospital Reports*, vol. xv., part 4, Oct., 1903.

DE VRIES (21) examined the right eye of a child ten months old, normal in form and size. With the exception of the abnor-

malities mentioned in the title, the various parts of the eye were normal. From the coloboma of the iris extended a cord which divided into two parts, each attached to the posterior surface of the lens and formed from the anterior part of the optic vesicle. Medially and laterally from the coloboma in the ciliary region cords extended to the posterior surface of the lens and represented elongated ciliary processes. The optic nerve formed a hollow cone protruding into the vitreous; within it ran the hyaloid artery which gave off two retinal branches.

The author ascribes as the cause an adhesion of the optic vesicle to the vascular tunic of the lens at the fœtal cleft, due to an injurious influence. The margin of the optic vesicle adhered to the tunica vasculosa at each corner, the development of the iris was interfered with, two processes were fixed in the tunica vasculosa, and the other abnormalities followed as secondary consequences. The hyaloid artery persisted longer than normally, because needed by the lens, the nutrition of which was impaired by the adhesions.

Monesi (22) states that in the human fœtus, two months old, the canaliculi unite in a common portion, which continues as the lachrymo-nasal canal. At a later period of development (four to six months), individual differences appear. Sometimes a cavity appears beside the one in the upper part of the naso-lachrymal canal, into which the canaliculi open and communicate with each other. In other cases, the common portion is smaller externally, and presents within a diverticulum-like section. These differences explain the variations found in adults and the lack of agreement among different observers. The valves described at the opening of the canaliculi into the lachrymal sac are probably the remains of the fœtal septum, which separated the canaliculus from the lachrymal sac. In the fœtal lachrymal sac, not infrequently is found a duplicature, caused by the varying development of separate parts. The lachrymal canal also shows the formation of diverticuli and duplicatures. The opening of the lachrymal canal into the nasal cavity takes place in this way, according to Monesi. The inner wall of the lachrymal canal undergoes extension, and toward the end of intra-uterine life the wall atrophies so as to leave an opening where the epithelium of the lachrymal canal and that of the nasal cavity lie against each other.

Laqueur (23) presents the facts which seem opposed to the localization of the field of the macula in the most anterior part of the calcarine fissure (Henschen). On the ground of clinical anatomical observations, he locates the cerebral centre of the macula in the posterior portion of the calcarine fissure, each macula with a centre in both hemispheres.

Opin (25) recommends, for investigation of the optic nerve according to Marchi's method, removal of the nerve with its bony surroundings in the optic foramen, from which it is to be taken only after hardening in Müller's fluid, in order to avoid the escape of the myelin, which, at the examination, appears in the form of dark points about the septa and in the network of neuroglia cells. Beside these dark points, there are others which are not due to degeneration of the nerve fibres or the neuroglia cells, are found in the neighborhood of the latter, and are as yet of unknown significance.

Verhoeff (26) finds Mallory's method of differential staining of the neuroglia of the central nervous system valuable also for staining sections of the eye, not only for coloring the neuroglia, but other tissues as well. He has modified the method of fixation, for the details of which reference must be made to the original. The cells of the papilla, named by Nicolai the musculus papillæ optici, are well stained by this method, and their structure is so clearly revealed that it is very improbable that they are muscle fibres. On the contrary, it is very probable that they represent neuroglia cells of a less highly differentiated form than those in the true optic nerve. Most probably they are modified spongioblasts, nearly related to Müller's fibres.

V.—PHYSIOLOGY.

27. **Abelsdorff, G.,** and **Feilchenfeld, H.** Dependence of the pupillary reaction on the place and extent of the stimulated surface of the retina. *Zeitschr. f. Psychol. u. Physiol. d. Sinnesorg.*, 34, 1, p. 111.

28. **Abelsdorff, G.,** and **Nagel, W. A.** The perception of the movement of the blood in the retinal capillaries. *Ibid.*, p. 291.

29. **Elschnig.** The light reflex of the retinal arteries in the human eye. *Klin. Monatsbl. f. Augenheilk.*, xlii., 1, p. 37.

30. **Grossmann, K.** The mechanism of accommodation in man. *Ophthalmic Review*, Jan., 1904.

31. **Tscherning.** The mechanism of accommodation. *Annales d'oculistique*, cxxxi., p. 108.

32. **Colombo.** The outermost boundary of the visual field of the human eye, determined by a perimeter of large radius. Bologna, 1904.

33. **Charpentier, A.** Physiological action of the N-rays. *Compt. rend. d l'acad. des sciences*, Feb. 1, 1904.

ABELSDORFF'S and FEILCHENFELD'S (27) investigations settle the question whether the pupillary action induced by a luminous object increases with the angle subtended by it. By objective study with a Zehender-Westien loupe, they determined that an increase in size of a luminous object caused an increased pupillary action, and that this action was most marked when the central part of the retina or its immediate neighborhood was affected. It cannot be said that equal quantities of light entering the eye will produce the same action of the pupil, for the pupillary-reflex sensitiveness of the retina decreases toward its periphery to such a degree that at the periphery the increase in size of the luminous object is of relatively little importance. This decrease in reflex sensibility toward the periphery can also be demonstrated in eyes adapted to the dark. Lights which by dispersion over a similarly large central region of the retina equally excited the pupillary reflex in eyes adapted to light and to dark need to affect a greater extent of surface in the periphery to excite the pupillary reaction in the eye adapted to the light than in the one adapted to the dark. The hypothesis that the reflex cannot be excited in the periphery of the retina is, therefore, untenable.

ABELSDORFF'S and NAGEL'S (28) observations explain the little shining bodies which can be seen circulating when one looks through a blue glass toward the bright sky as the entoptic perception of red blood corpuscles, due to the absorption of certain spectral rays. The phenomenon cannot be seen in the direct line of vision, because of the absence of vessels in the fovea centralis, but can be observed in peripheral vision in homogeneous light by means of a spectrum or light filters. It is very clear in indigo and violet, less so in yellowish green. It cannot be seen in red, orange, or bluish green in any gradation of brightness. A solution of blood through which the yellow-green rays are just visible will have completely absorbed the indigo and violet rays, a fact which satisfactorily explains why the little bodies are entoptically seen less clearly in yellow-green than in violet.

ELSCHNIG (29) combats Dimmer's view that the light reflex of the retinal arteries comes from the anterior surface of the axis stream, that of the veins from the anterior surface of the blood

column, because in compression and in embolism of the central artery of the retina, where the circulation is interrupted and an axis stream no longer exists, the light reflex still persists on the central artery.

Grossmann (30) thus states the two principal theories: 1. Helmholtz's theory, which assumes that the increase of curvature of the lens during accommodation results from relaxation of the zonula in consequence of the contraction of the ciliary muscle. 2. Tscherning's theory, which assumes that the increase of curvature of the central portion of the lens is a consequence of contraction and flattening of its peripheral part. Grossmann's attention was directed to this question by a twenty-six-year-old patient with bilateral aniridia and slight anterior and posterior polar opacities in both lenses. The eyes had 6 or 7 D of hypermetropia with astigmatism. There was no glaucoma. After instillation of eserine, one could distinguish three zones in each lens—an inner, a darker middle, and an outer red. The annular middle zone was the expression of the refractive difference between the central and peripheral portions. A notable symptom was the tremulousness of the lens after application of eserine, as well as the visibility of the ciliary processes, while without the drug the lens was not tremulous and the ciliary processes were invisible. The lens was perfectly round, although its equatorial diameter was reduced. Under normal conditions this measured $11\frac{1}{2}mm$, under eserine $10\frac{1}{4}mm$, under homatropine $12\frac{1}{4}mm$. Under eserine the thickness of the lens increased $1.3mm$, the distance between the lens and cornea was reduced $\frac{1}{2}mm$, and the posterior surface of the lens arched backward about $0.8mm$. The tremulousness of the lens was the result of the relaxation of the zonula and the looseness of the lens, although during accommodation it usually moved a little upward and inward. From the lights reflected by the surfaces of the lens the author concluded that the posterior surface of the lens changes in the same way as the anterior during accommodation, that it forms a posterior lenticonus with increased curvature over the central, and flattening of the peripheral, portion.

Tscherning (31) communicates the results obtained by his student, Dr. Bezio, in measuring the changes in form undergone by the lens during accommodation. He states that $\frac{6}{10}$ of the increase of refraction during accommodation is to be ascribed to the curvature of the anterior surface and $\frac{4}{10}$ to that of the pos-

terior. The lens increases in thickness so that the anterior pole is moved somewhat forward, the posterior somewhat backward. In only one case was the posterior pole moved slightly forward. The curvature of the peripheral portion of the lens was less during accommodation, so that there was a difference of 5 or 6 D between the refraction of the central part of the lens and that of the peripheral. The investigations are difficult because the contraction of the iris during accommodation restricts the measurement to a limited zone. Grossmann confirmed the results in a case of congenital aniridia. The reflex from the posterior surface of the lens was observed to take a deeper position during accommodation, a symptom which Hess ascribed to a sinking back of the lens from its own weight. Tscherning explains it thus: During accommodation the fluid of the vitreous passes toward the centre from the periphery, leaving the peripheral parts of the consistence of a thicker jelly, while the central part more nearly approaches fluidity, and this results in a relaxation of the posterior capsule of the lens, which gives rise to the slight trembling of the reflex from the posterior surface of the lens during accommodation. Tscherning holds, in opposition to Hess, that the lenticular changes during accommodation are due not to relaxation but to tension of the zonula.

According to Colombo (32), the limit of perceptive ability of an emmetropic eye in the horizontal meridian on the temporal side may reach a maximum of 123° and usually does not fall below 112°. The influence of the size of the test object on the perceptive ability is usually slight and often of no importance. The extension of the perceptive ability was similarly shown whether the test objects were white or colored.

Charpentier (33) has investigated the action of Bloudlot's N-rays on the visual centres. Bloudlot had already shown that these rays increase the sensitiveness of the eye to light. Charpentier shows that visual acuteness is increased by irradiation of the occipital lobe with the N-rays, which pass through the bone. He was able to demonstrate on himself that the action of the N-rays on the cortical centre caused a sensation of light in the dark. By their action on the subcortical centres (corpora quadrigemina, etc.) he could produce contraction of the pupil, and by irradiation of the region of the cilio-spinal centre dilatation of the pupil.

VI.—REFRACTION AND ACCOMMODATION.

34. **Koster.** Presbyopia at an early age. Astigmatic accommodation under the influence of eserine. ARCH. OF OPHTH., Jan., 1905, p. 22.

35. **Spengler.** Is corneal astigmatism hereditary? *Klin. Monatsbl. f. Augenheilk.*, xlii., 1, p. 164.

36. **Elschnig.** The refraction of infants. *Zeitschr. f. Augenheilk.*, xi., 1, p. 10.

KOSTER's (34) case was one of a man twenty-seven years old who had a range of accommodation of only 4 D. The cause was supposed to be a resistance to the contraction of the ciliary muscle situated in the ciliary body. Instillation of eserine in the left emmetropic eye of this patient caused uneven contraction of the ciliary muscle with unequal accommodation in the corresponding meridians, so that at a certain time during the action of the drug perfect vision could no longer be obtained with spherical concave lenses, but could with a sphero-cylindrical combination.

SPENGLER (35) gives in tabulated form the corneal curvature of the eyes of five successive generations of the same family, which, up to the third generation, had already been published by Wecker. Of 94 eyes, 56 had direct hypermetropic astigmatism, 4 oblique, and 18 inverse. Only 16 eyes had no astigmatism. As an example quoted from the table, 6 of the 8 eyes of the children of a woman of the fourth generation had inverse hypermetropic astigmatism.

ELSCHNIG (36) found with relative frequency in infants shortly after birth a myopia of between 4 and 7 D, which gave place to a low degree of hypermetropia after the instillation of atropine. This apparent myopia, caused by accommodative tension, explains the statement once made by Jäger, that the majority of the eyes in infants were myopic.

VII.—MUSCLES AND NERVES.

37. **Barcke, C.** On congenital defects of motility of the ocular muscles. Report of two cases. *Amer. Jour. of Ophth.*, Dec., 1903.

38. **Hall, Arthur.** Herpes of left upper division of the fifth nerve, with ocular paralysis. Paralysis of the third nerve. Iritis and diabetes. *British Jour. of Dermatology*, Sept., 1903.

39. **Bechterew, W.** The cerebral centres of divergence. *Obossenie psychiatrici experiment. Psychol.*, 1903, No. 7. From a review in the *West. Ophth.*, 1904, 1.

Barcke (37) records two cases—one congenital unilateral paralysis of the levator and extrinsic muscles controlled by the third nerve. In the other, both eyes were affected with nystagmus and paresis of all the extrinsic muscles except the superior oblique. Alling.

Hall's (38) case was a man sixty-six years old who had been sick for a week. He had paralysis of the left oculomotorius and trochlearis, injection of the conjunctiva, spots on the cornea, ptosis, dilatation of the pupil, and divergence of the eye. There was also an eruption on the skin of the left temple. Then the right eye became painful and a paralysis of the right oculomotorius, associated with iritis, appeared, but soon passed away.

Hall remarks that no other case is known to him in which herpes with paralysis on the same side has been followed by paralysis without herpes on the other side. The patient also suffered from diabetes.

Bechterew (39) found by experiments on animals two cortical centres for the divergence of the eyes. The posterior centre is found in the angular gyrus, the frontal centre just in front of the middle portion of the præcentral fissure. The frontal centre must be looked upon as the centre for voluntary movements, the posterior for involuntary or reflex movements. The subcortical abduction centres are situated in the nuclei of the abducentes and form the centres for active divergence. The frontal centres probably act in conjunction with the abducens nuclei to produce voluntary active divergence. Besides these there is a special subcortical divergence centre in the anterior corpora quadrigemina which plays the part of a reflex centre, and seems to act in connection with the centre in the angular gyrus. One of the convergence centres in monkeys is in the cortex of the occipital region, back of the place of junction of the fissure of Sylvius and the first temporal. A second centre lies in the lower part of the angular gyrus, and must from its position be supposed to be a reflex centre communicating with the cortical nucleus of the optic nerve. The centre of voluntary convergence has not yet been determined with certainty. Subcortical convergence centres lie (1) in the oculomotor nuclei and communicate with the frontal centres, and (2) in the anterior corpora quadrigemina, in functional and anatomical communication with the posterior cortical centres of convergence.

Sections VIII.–XII. Reviewed by DR. R. SCHWEIGGER, Berlin.

VIII.—LIDS.

40. **Pegoraro.** Contribution to the study of favus palpebralis. *Arch. di ott.*, Feb., 1904.

41. **Rosenstein.** A fungoid ulcer of the skin of the lid. *Centralbl. f. prakt. Augenheilk.*, xxviii., p. 14.

42. **Wood, Casey A.** Blastomycosis of the ocular structures, especially of the eyelids. *Annals of Ophth.*, Jan., 1904.

43. **Birch-Hirschfeld** and **Kraft, Oscar A.** Eye disease from acanthosis nigricans. *Klin. Monatsbl. f. Augenheilk.*, xlii., 1, p. 232.

44. **Calderaro.** Correction of ectropion after facial scleroderma. *La clinica oculistica*, Jan., 1904.

45. **Mobilio.** Marginal plastic in the treatment of entropion and trichiasis. *Arch. di ott.*, Jan., 1904.

46. **Parinaud.** Operation for ptosis. *Ann. d'ocul.*, cxxxi., p. 121.

47. **Lindenmeyer.** Paradoxical movements of the lids. Collection of articles on ophthalmology. Published by A. Vossius, vol. vi.

48. **Stanculeano, G.,** and **Costin, N.** Two cases of coloboma of the lids. *Ann. d'ocul.*, cxxxi., p. 49.

PEGORARO (40) describes a case of favus in the middle third of the lower lid without involvement of the ciliary margin. The crust was sulphur yellow, beneath it was a powdery mass which looked like chalk. The phlogistic symptoms were unimportant. Bacteriological investigations revealed a typical form of Achorion Schönleinii. Recovery was rapid after removal of the crusts and painting with tincture of iodine. CIRINCIONE.

ROSENSTEIN (41) describes an ulcer of the lid infected with yeast fungi, which had the form and size of a large bean with wall-like everted margins, without irritation or tenderness. The base of the ulcer as well as its margins was covered by a thick, yellowish-white, crumbling, apparently dry mass from which a culture of yeast fungi, mostly in the condition of germination, was obtained. The ulcer was cauterized, proved superficial, and healed in a few days.

Some thirty-five cases of blastomycosis, occurring in different parts of the body, have been recorded. Of these six have involved the eye. WOOD (42) gives the history of his own case and of two others so far unpublished. The disease begins as a papule and later becomes pustular. There is then a gradual extension of the ulcerating surface which is covered with papillæ and bordered with abscesses. Cicatricial healing takes place in the

oldest portions. The disease may extend intermittently for years. The skin is primarily attacked, although the mucous membrane may be involved later. Excision is the best treatment; iodides however seem to be especially effective. ALLING.

BIRCH-HIRSCHFELD and KRAFT (43) saw that rare disease acanthosis nigricans on the lids of an old woman suffering from carcinoma, in the form of superficial berry-like papillæ of various sizes up to that of a raspberry, situated in the intermarginal space. In one place the conjunctiva was rendered uneven. The local annoyance and irritation of the eye were relieved by removal of the warts; the conjunctiva improved under zinc and protargol.

Ectropion after scleroderma of the face is, according to CALDERARO (44), the result of a sclerotic process which attacks the skin, the conjunctiva, and the underlying connective tissue. To relieve the ectropion, he advises to transplant the mucous membrane of the prepuce into the conjunctival fornix, and after this is healed increase the skin of the lid by means of a pedicled graft. CIRINCIONE.

MOBILIO (45) considers that the marginal plastic would be the best operation for trichiasis, if the probability of a partial necrosis of the limbus and the growth of hairs in the transplanted skin could be excluded. CIRINCIONE.

PARINAUD (46) describes the technique of his operation for ptosis, which, like Motais's, depends on the superior rectus for the movement of the lid. While in Motais's method this is secured by means of a flap, taken from the tendon of the superior rectus, sutured to the tarsal cartilage, Parinaud secures it by means of subconjunctival sutures, which join the superior rectus with the cartilage and produce cicatricial cords, as in Pagenstecher's operation. In the discussion, Chevallereau condemned the methods of both Motais and Parinaud as unsatisfactory. Motais thought his operation better than Parinaud's, and Valude had been pleased with the results of Parinaud's operation. BERGER.

LINDENMEYER (47), in his investigations, looked away from the superior tarsal muscle, formerly known as Müller's muscle, because it is too weak an antagonist to the orbicularis oculi. Paradoxical movements of the lids, *i. e.*, such movements as are not to be expected even in pathological conditions, occur spontaneously, or in connection with the movements of the eyeball,

or accompanying simultaneous action of other muscles. He divides them into the following groups: 1. Associated movements of the lids, with contraction of the muscles of the lower jaw, throat, and face. 2. Paradoxical associated movements between the muscles of the lid and those of the eyeball. 3. Spontaneous raising of the upper lid. To the second group, Lindenmeyer adds a new case, in which there was a peripheral paralysis of branches of the oculomotorius, and the levator palpebræ was affected, so that the lid rose when there was an impulse of the will to put in action the paralyzed muscle and produce adduction. The patient was sixty-five years old, and had at first noticed that when bodily tired the eye would close. Lindenmeyer diagnosed a peripheral paralysis, because the abnormal lifting of the lid occurred only when a paralyzed ocular muscle was called into action, while a contraction of the upper lid during innervation of an apparently sound muscle points to a nuclear lesion. Hysteria also produces similar clinical pictures. The third group embraces cases in which involuntary and usually rhythmical lifting of the upper lid occurs in oculomotor paralysis. Sometimes others of the muscles supplied by the oculomotorius would be simultaneously incited to action. This was seen to happen, in a case described, frequently in the daytime, especially after bodily weariness, and also during sleep. The eye had gradually become blind and paralyzed, and the original cause no longer operated. This also was a case of peripheral paralysis.

Stanculeano and Costin (48) describe two cases of coloboma of the eyelids. One was very remarkable, because of a triangular fold of connective tissue, which they considered to be remains of a synechia, formerly present between the amnion and the embryonal eye. This they believe to be evidence in favor of van Duyse's theory, that colobomata of the lids were due to synechiæ between the amnion and the eye. Berger.

IX.—LACHRYMAL APPARATUS.

49. **Inman, William.** Acute dacryoadenitis. *R. London Ophth. Hosp. Reports*, vol. xv., part 4.

50. **Polignani.** Primary tuberculous dacryoadenitis. Naples, 1904.

51. **Baas, K.** Adenocarcinoma in an aberrant lachrymal gland.

Inman (49) reports ten cases of acute dacryoadenitis, which he has observed within the last two years at Moorfields Hospital,

and has come to the conclusion that the disease is by no means so rare as has been supposed. The cases have been divided into two groups: (1) those which appear simultaneously with mumps are usually bilateral, and do not break down in suppuration; those which are not associated with mumps are usually monolateral, and may break down in suppuration. These cases have often been mistaken for orbital cellulitis, and frequently incisions have been made through the lid without finding pus, though it has escaped some days later through the conjunctiva. The 10 cases consisted of 6 men and 4 women. The oldest patient was thirty-seven, the youngest three years old. In 9 of the 10 cases the affliction was on the left side. In only 1 case was the disease associated with mumps, and in this case the lachrymal gland suppurated, though the parotid did not, so that possibly each affection was independent of the other. Most cases probably arise from local infection. Treatment should be according to general principles. Pus should be evacuated as soon as possible, and then hot compresses applied. The swelling usually goes down quickly and the patient recovers.

DEVEREUX MARSHALL.

POLIGNANI'S (50) patient, thirty-eight years old, had for several weeks swelling of the right upper lid, painful at the orbital margin. The tumor was as large as a nut, hard, elastic, and covered with reddened skin. The eye was healthy. By means of a broad incision, a small amount of pus was evacuated, and a dark-red lachrymal gland was exposed and shelled out. Recovery. Histological examination demonstrated tuberculosis of the lachrymal gland. CIRINCIONE.

BAAS (51) found normal tissue of the lachrymal gland, together with an adenocarcinoma, in a tumor as large as a cherry, which had developed a centimetre upward and outward from the external canthus. Such scattered portions of the lachrymal gland have been proved to be regularly present in the skin of the region of the lid.

X.—ORBIT AND NEIGHBORING CAVITIES.

52. **Purtscher, O.** Purulent tenonitis. *Centralbl. f. prakt. Augenheilk.*, xxviii., p. 65.

53. **Parsons, J. Herbert.** A case of orbital wound in which the optic nerve and central vessels were divided. *R. L. O. H. Reports*, vol. xv., part 4.

54. **Coppez.** Actinomycosis of the orbit. *Soc. belge d'ophtalmologie*, Nov. 29, 1903.

55. **Collucci.** A case of echinococcus cyst of the orbit. *Ann. di ottalm.*, Nos. 1 and 2, 1904.

56. **Birch-Hirschfeld, A.** Contribution to the study of osteomas of the orbit. *Klin. Monatsbl. f. Augenheilk.*, xlii., i., p. 213.

57. **Fruginele, C.** Plexiform orbito-temporo-palpebral neurofibroma. *Ann. di ottalm.*, Nos. 1 and 2, 1904.

58. **Frank, M.** Congenital carcinoma of endothelial origin in the orbit of an infant. Operation and preservation of the eyeball. *Med. Record*, Jan. 9, 1904.

The case of purulent tenonitis, which PURTSCHER (52) observed, presented a limitation of movement which increased to fixation of the globe, optic neuritis, venous stasis in the anterior section of the globe, and a bubble of pus as large as a bean under the ocular conjunctiva, in the region of the insertion of the internal rectus. No chemosis, protrusion, ptosis, or involvement of the uvea was present.

PARSONS's (53) patient was a man, twenty-nine years old, who was struck in the right eye with a table-knife. That same night the eye was hard as a stone and completely blind. The wound was below, the movements of the globe normal, except on the part of the external rectus. The pupil was dilated and fixed. There was a marked œdema at the posterior pole of the eye. The papilla was pale red, its margins indistinct. The vessels were of normal size, the arteries resembling the veins in color. Pressure on the globe caused the blood to flow out of the vessels, an evidence that little or no circulation was present. An intensely white region stretched from close to the outer side of the pupil downward, its margins sharply defined, its surface elevated about 2 D above the level of the fundus. The tension was normal for a week after the injury. Three weeks later, the cornea ulcerated, but soon healed. The papilla was totally atrophic, and there was a great degeneration, like proliferation of connective tissue, in the retina. A brief review of all similar cases in literature follows. Regarding the pathology of the changes, the author suggests that the œdema at the posterior pole of the eye may be explained by the portion which has become anæmic very quickly absorbing fluid from the neighborhood. The retina was probably detached in the region of the macula, which may have been the reason for the absence of the cherry-red spot, though this may have been due to some other cause. As soon as the divided

ends of the central vessels have closed, the vessels begin to fill again in consequence of the direct and indirect cilio-retinal anastomosis about the papilla. This is more venous than arterial, so the veins are filled first, then new capillaries form. The blood cannot escape through the central vein, because this has been obliterated, so the only way out is through the venæ vorticosæ. Here it meets great resistance, so venous hyperæmia and hemorrhages result. The retina finally becomes changed into a fibrous tissue, in which spots of pigment show the location of former hemorrhages. The author then discussed the probable extent of the changes, and added a sketch of the appearance of the fundus. DEVEREUX MARSHALL.

COPPEZ (54) reports a case of actinomycosis of the orbit, which occurred in a workman in a brewery. The actinomyces was probably introduced by chewing bits of grain, passed through a carious tooth into the upper jaw and thence into the orbit. In spite of operative treatment and the internal administration of 10*gm* K. I. daily, there was a recurrence, with paralysis of the external rectus and swelling of the submaxillary gland; later, exophthalmos, suppuration of the cornea, cerebral symptoms, and death. BERGER.

COLLUCCI (55) describes three cases of echinococcus cysts of the orbit, which were operated on by Prof. De Vincentiis. Pain, exophthalmos, and fluctuation, when the cyst could be palpated, were present, more marked when there was suppuration. Papillitis is almost constant. The most certain method of diagnosis is by puncture. CIRINCIONE.

In BIRCH-HIRSCHFELD'S (56) case the position and size of the tumor in the frontal sinus were accurately determined by means of the X-rays. This rendered the operation, once so dangerous, much simpler. The radical cure, also, was demonstrated by the X-rays.

FRUGINELE (57) reports the case of an eighteen year-old girl, who had a flattened tumor on the right side of her face, which started at the outer canthus and extended over the lower part of the temporal region and the outer part of both the upper and lower lids. The tumor had a smooth surface and indistinct borders. The skin covering it was normal. The upper lid was half closed. In the outer conjunctival fornix was a tumor the size of a large pea, a process of the principal tumor. The

eyeball was pushed downward and inward. The tumor had a soft, almost pseudo-fluctuating consistency, with nodules and hard cords. A good part of this mass was removed. It appeared histologically to be composed of cylindrical cords of connective tissue of various sizes, which, looping and coiling together, formed a lamellar, hyperplastic tissue. CIRINCIONE.

XI.—CONJUNCTIVA.

59. **Praun, E.** Violet staining of the conjunctiva and cornea by an aniline pencil. Decoloration by superoxide of hydrogen. *Centrbl. f. prakt. Augenheilk.*, xxviii., p. 45,

60. **Lister, W. T.,** and **Hancock, W. Ilbert.** Epithelial plaques of the conjunctiva. *R. L. O. H. Reports*, vol. xv., part 4.

61. **McNab, A.** The diplobacillus liquefaciens (Petit) and its relation to the Morax-Axenfeld diplobacillus of blepharoconjunctivitis. *Klin. Monatsbl. f. Augenheilk.*, xlii., 1, p. 54.

62. **Axenfeld, Th.** McNab's article on the diplobacillus liquefaciens (Petit). *Ibid.*, p. 64.

63. **Steiner, L.** A case of amyloid degeneration of the conjunctiva and tarsus in a Malay. *Centralbl. f. prakt. Augenheilk.*, xxviii., p. 33.

In PRAUN'S (59) case, the stained conjunctiva withstood the action of dionin. It was just as strongly colored on the fourth day as at first, and then disappeared under applications of 3 per cent. hydrogen binoxide.

LISTER and HANCOCK (60) describe four cases of this rare and little-known disease. The first was a man, twenty-four years old, who had a longitudinally oval tumor from *2mm* to 6 above the cornea. It was elevated about $\frac{1}{2}$*mm* and was freely movable. From time to time bits would break off from its surface, act as foreign bodies, and cause severe irritation. The lids were normal. The tumor was removed, together with a portion of the normal conjunctiva. The second case was a girl, fifteen years old, who had had a swelling on the conjunctiva for three months. It was almost circular, about *2mm* in diameter, $\frac{1}{2}$*mm* thick, freely movable, placed near the limbus. It was removed, recurred a year later, and was again removed. Examination revealed that both tumors were composed of a very thick layer of epithelium which at its borders merged into the normal conjunctiva. The epithelium decreased gradually so that the deep layer resembled the normal conjunctiva. At no place did the epithelium penetrate the connective tissue. The third case was a man, fifty-one years

of age, who had been injured by a stone. There was a white swelling on the inner side of the cornea in the conjunctiva, similar in appearance to those just described. The microscopic appearance was also similar. Still another case was referred to.

These cases differ from those of epithelioma in that they have no elevated margin, as seen in epithelioma of the conjunctiva and cornea, and they are of a pale white color, like scorched epithelium. They seem related to callosities of the skin which are due to hyperplasia of the horny layer, and may be either congenital or developed. DEVEREUX MARSHALL.

The bacillus liquefaciens was found by Petit only in hypopyon keratitis. Even by prolonged culture under varying conditions, McNAB (61) could not do away with its differences from the Morax-Axenfeld diplococcus.

AXENFELD (62) adds that it is impossible to transmute the Morax-Axenfeld bacillus into the Petit by modified, prolonged culture, or symbiosis. This very common bacillus is pathogenic exclusively in the conjunctival sac and is to be met with only in this place.

STEINER (63) describes a very thick upper lid, hard as cartilage, with evident trachomatous changes, which he at first mistook for a sarcoma. The tissue of the tumor was composed of glassy flakes and fibres which for the most part gave the amyloid reaction; the rest were hyaline. The tarsus showed no typical trachoma follicles.

XII.—CORNEA, SCLERA, ANTERIOR CHAMBER.

64. **Fehr.** Corneal degeneration. *Centralbl. f. prakt. Augenheilk.*, xxviii., p. 1.

65. **Römer, Paul.** Instructions for clinical investigations regarding serum therapy in ulcus serpens. *Zeitschr. f. Augenheilk.*, xi., 3, p. 193.

66. **Gifford, H.** Corneal ulcer notes. *Ophth. Record*, March, 1904.

67. **Fox, L. Webster.** Corneal cornea. An historical review, together with a new non-operative method of treatment. *Ophth. Record*, Jan., 1904.

68. **Yamaguchi, H.** Contribution to the study of melanosis corneæ.

FEHR'S (64) three cases of lattice-like and nodular cloudiness of the cornea have in common: (1) the slowly increasing opacity of the cornea without true inflammatory symptoms; (2) the beginning of the trouble at an early age; (3) the very chronic course; (4) the absence of any demonstrable basal disease. But the corneal opacities themselves show true distinctive marks.

For the most part they form a symmetrical opacity in the superficial layers, in which very fine points and coarser spots can be seen with the loupe, but over these the corneal surface is everywhere smooth with no epithelial nodules. The lattice-like appearance is also absent.

Römer (65) gives, for ophthalmologists who are not yet skilled in the modern views and teachings of bacteriology, a clear presentation of the fundamental facts on which the knowledge and progress of the serum treatment of ulcus serpens is based. The developed immunity of animal organisms rests principally on the formation of specific protective substances in the blood and fluids of the body. To reduce the infection of pneumococci by serum, Römer does not work with antitoxines, but with bacteriolytic antibodies. An immune serum destroys a pathogenic germ by the co-operation of two substances, the so-called amboceptors and complements. The amboceptors are present in an immune serum in concentration as the specific protective bodies and are proportionately resistant. The complements are normal constituent parts of any fresh serum, very liable to change, and will not retain their efficiency when transferred from one kind of animal to another. The complements useful for men are obtained through the immunization of several kinds of animals with numerous different stocks of pneumococci pathogenic to animals and mankind. By this means it is supposed that still further improvement of the preparation is obtained. Clinically the corneal infection should be investigated on a cover-glass stained with carbol fuchsin. Even where no pneumococci are found, the injection of serum can be used; 10*ccm* injected three fingers' breadth to the side of the anterior spine of the pelvis rarely produces an erythema as large as the palm of the hand. The principal value of the use of serum lies in prophylaxis, Römer thinks, and it should be more commonly in the hand of the general practitioner. The prophylactic extirpation of the lachrymal sac is not effective in his opinion unless accompanied by an inoculation of serum. His clinical experiences with the action of the serum have not yet been published.

Gifford (66) advocates trichloracetic acid for milder forms of ulcer. On account of its greater penetrating power, he prefers the Paquelin cautery to the galvano-cautery in severe cases, especially where yellow infiltration extends through nearly the whole depth of the cornea. Alling.

Fox (67) claims originality in treatment of conical cornea by use of opaque lenses which have clear holes or slits of a size and shape determined by experiment. ALLING.

YAMAGUCHI (68) found a melanosis corneæ in a pair of pig's eyes which consisted of pigmentation of the deep layer of cells of the corneal epithelium. The iron reaction was negative.

Sections XIII.—XVIII. Reviewed by DR. O. BRECHT, Berlin.

XIII.—LENS.

69. **Freund.** Tetanus as a cause of cataract. *Wiener med. Wochenschr.*, 1904, Nos. 10, 11.

70. **Pooley, T. R.** Traumatic subluxation of the lens; secondary glaucoma; successful extraction, with preservation of vision. *Amer. Jour. Ophthal.*, March., 1904.

FREUND (69) adds three new observations to the two published by him in 1899, of formation of cataract after tetanus in young men (soldiers). The eyes of all patients suffering from tetanus should be carefully watched, to determine whether tetany is the cause of cataract. All spasms of the flexor muscles are not tetanus; they may belong to the tonic muscular spasms of infancy.

XIV.—IRIS.

71. **Pollock, W. B. Inglis.** Tuberculous iritis. *Glasgow Med. Jour.*, Feb., 1904.

72. **Abadie, C. H.** Tuberculous iritis and its treatment. *Arch. d' opht.*, xxiv., No. 3, p. 176.

73. **Kipp, C. J.,** and **Alt, A.** Two cases of syphiloma of the ciliary body. *Amer. Jour. Ophthal.*, Jan., 1904. The eyeballs were removed. Microscopic examination by A. Alt.

74. **Alt, A.,** and **Colbertson, L. R.** A case of primary leucosarcoma of the iris. *Amer. Jour. Ophthal.*, Feb., 1904.

75. **Pooley, T. R.** A case of non-traumatic cyst of the iris. *Amer. Jour. Ophthal.*, March, 1904,

76. **Parsons, J. Herbert.** Epithelial hyperplasia of a ciliary process. *R. L. O. H. Reports*, vol. xv., part 4.

POLLOCK (71) describes the pathological condition of an eye of a sixteen-year-old girl whose mother had died of phthisis. For two years she had suffered from interstitial keratitis, not noticeably improved by the antisyphilitic treatment employed. The left eye became phthisical and was enucleated, the right retained a vision of fingers at 3½ feet.

Numerous tubercles, the size of a pin's head, were visible on the iris. There was total posterior synechia with an exudate in

the region of the pupil. There was no caseation. The entire uveal tract was inflamed. Numerous giant cells were to be seen, but no tubercle bacilli were found. The writer concludes that the case was of tuberculous rather than syphilitic origin.

According to ABADIE (72), the prognosis of tuberculous iritis is not so bad as usually thought, if treatment is begun early. At the commencement of the disease, as in the reported case, the diagnosis can be made only through failure of mercurial treatment. Inunctions of a preparation of guaiacol, an organic preparation of iodine (iodogenol) internally, and frequent meals of red meat and meat juice, brought about a rapid improvement and a gradual cure. V. MITTELSTÄDT.

POOLEY'S (75) case presented a cystic tumor of the iris, which had steadily increased in size for twelve years. It appeared as a dark-colored mass, with transparent anterior wall which extended from the periphery nearly to the pupillary edge of the iris. It was excised with satisfactory result. Examination showed rarefied iris tissue, but no epithelial lining.

ALLING.

PARSONS'S (76) patient was a man, sixty-five years old, whose left eye became inflamed. There was no history of injury. The eye was enucleated on account of a disease which was unconnected with the interesting condition of the ciliary process described. On one of the ciliary processes was a globular swelling, $\frac{3}{4}$ to 1*mm* in diameter. It was chiefly composed of irregular groups of cells, which resembled non-pigmented epithelium, embedded in a hyaline substance, with numerous irregular spaces. A tubular arrangement of the cells could not be demonstrated, although the general arrangement pointed that way. These cells were due to a proliferation of the inner layer of the retinal epithelium. No trace of inflammation could be detected. In all probability the proliferation was the result of a chronic degenerative hyperplasia of the epithelium, which appeared as an accompaniment of old age. There was no indication of malignancy, nor of any inclination to invade other tissues.

DEVEREUX MARSHALL.

XV.—CHOROID.

77. **Hirschberg.** Prognosis of malignant tumors of the choroid. *Berl. klin. Wochenschr.*, 1904, Nos. 4 and 5.

78. **Sampson.** Sarcoma of the choroid. *Amer. Jour. Ophthal.*, 1904, p. 345.

79. **Key.** Sarcoma of the choroid, with necrotic nucleus. *Hygiea*, 1904, No. 2. Reference in *Deutsche med. Wochenschr.*, xxx., No. 12, p. 439.

80. **Coppez, Henri.** A case of metastatic carcinoma of the two choroids. *Arch. d'opht.*, xxiv., 2, p. 79.

81. **Litten.** Melanotic sarcoma of the choroid, with carcinoma of the gall bladder. *Münch. med. Wochenschr.*, 1904, No. 1, p. 41.

Hirschberg (77) says that 25 % of 68 cases of sarcoma of the choroid, ciliary body, and iris operated on by him died of metastasis, principally of the liver, most of them within two years. Any one sound four years after the operation may be considered permanently cured. [Not altogether. Ten, fifteen, and twenty years of no symptoms may be followed by liver metastasis and death.—H. K.]

Coppez (80) observed the development of a metastatic carcinoma of the choroid in each eye of a man forty-three years old, whose general condition was good, and who came only on account of marked loss of vision in the right eye, with normal fundus, but a central scotoma. A month later the papilla was very red, the vessels almost unchanged. Inward and downward from the papilla was a tumor half the size of the papilla, which grew larger, while the retina in the neighborhood of the papilla showed a grayish-white infiltration, with some rosy round deposits at the margin. No true vascular changes. Retina detached below. A month later, sudden loss of vision of left eye, with similar change in the field and similar ophthalmoscopic picture, except that the papilla remained intact. Later, secondary glaucoma appeared in the right eye, and eight months after the commencement of the trouble the patient died. There was no autopsy. Probably the case was one of emboli in the region of the posterior short ciliary arteries from carcinomatous cervical glands, which had been removed during life.

v. Mittelstädt.

XVI.—VITREOUS.

82. **Van Geuns, J. R.** A case of persistent hyaloid artery. *Zeitschr. f. Augenheilk.*, xi., 4, p. 316.

XVII.—GLAUCOMA.

83. **Dunn, Percy.** A case of subacute glaucoma caused by a hypermature cataractous lens. *West London Medical Journal*, Jan., 1904.

84. **Veasey, C. A.,** and **Shumway, E. A.** Simple glaucoma in the young with a report of two cases. *Ophth. Record*, Jan., 1904.

85. **Stevenson, Edgar.** Congenital glaucoma. *Liverpool Medical and Chirurgical Journal*, Jan., 1904.

86. **Truc, H.** Chronic juvenile glaucoma. *Rev. général d'opht.*, xxiii., p. 1.

87. **Wilder, W. H.** The influence of resection of the cervical ganglia on glaucoma. *Annals of Ophthal.*, Jan., 1904; also *Jour. Amer. Med. Assoc.*, Feb. 6 and 13, 1904.

88. **Kalb.** Chronic glaucoma treated by resection of the superior cervical ganglion and by dechloridation. *Soc. d'ophtalmologie de Paris*, Feb. 2, 1904.

89. **Halben, R.** A case of vitrification of the iris in buphthalmos, and a criticism of Weinstein's theory of the formation of Descemet's membrane. *Arch. f. Augenh.*, xlix., p. 220.

DUNN's (83) patient was a woman eighty-eight years old, whose left eye had contained a cataract for some years. Recently she had complained of symptoms which pointed to glaucoma in the left eye. A fortnight before she came under observation she was seized with acute pain in the left eye. When first seen, acute glaucoma was present; the tension was + 2. Eserine reduced the tension somewhat, and a few days later an iridectomy was performed and the lens removed with a spoon without loss of vitreous. Three months later, the vision was $\frac{6}{12}$ and Jäger No. 4 could be read with correction. The right eye remained normal, except for a slight haziness of the lens.

DEVEREUX MARSHALL.

The first patient described by VEASEY and SHUMWAY (84) was a colored girl who had suffered from an attack of typhoid fever and had at the time some inflammation of the eyes. The right eye began to fail during convalescence and the vision was gradually lost after three years without inflammation or pain. Examination revealed clear media, complete excavation of the disk with slight rise of tension. The left eye was normal. Although there were no inflammatory signs the pain was severe and the right eye was enucleated. Microscopically there appeared an excessive amount of pigment about the ciliary region, and the lens was of unusually large size. These points might have some bearing on the causation of the glaucoma. In other respects the eye showed the lesions of primary glaucoma. The second case, a young man of nineteen, had had failing vision for three years. The vision with the correction for myopia was $\frac{20}{20}$ and $\frac{20}{40}$ in the right and left eyes respectively. T both eyes + 1. The nerve of the right eye showed typical cupping and in the left what appeared to be a physiological excavation of the disk. The field

of vision in the right eye was lost except for a small central area. In the left it was slightly contracted. A year later the right-eye vision was reduced to light perception and that of the left to $\frac{2}{5}\frac{0}{0}$. Iridectomy was performed in both eyes and the left was somewhat improved thereby. ALLING.

STEVENSON'S (85) patient was a boy five years old who had buphthalmos. The tension was +, the papilla excavated and atrophic. There was also nystagmus. The clinical picture was the usual one of buphthalmos. DEVEREUX MARSHALL.

WILDER (87) gives a detailed report of seven cases of sympathectomy for glaucoma from his own practice and also abstracts of cases of all operations so far performed in this country. The author feels that positive conclusions are not yet justifiable in view of the limited number of cases and the short period which has elapsed since some of the operations were performed.

ALLING.

KALB (88) reports a case of chronic glaucoma in which an aqueous solution of eserine, iridectomy, sclerotomy, and finally resection of the cervical sympathetic proved of no avail, while later under the use of an oily solution of eserine the vision rose from $\frac{1}{3}\frac{1}{0}$ to $\frac{1}{3}$. A diet free from salt was also tried without result, but Kalb does not state on what theory of glaucoma the attempt was based. In the discussion, Abadie declared that every case of glaucoma treated exclusively with myotics was certain to become blind, while Valude and Parinaud stated that they had preserved good vision for as long a time as twenty years with myotics alone.

BERGER.

HALBEN (89) reports two cases of the formation of a vitreous membrane covered with endothelium, in one case on the anterior, in the other on the posterior surface of the iris, the one after glaucoma of childhood, the other after a long-continued glaucoma simplex. He also criticises Weinstein's theory (see these ARCHIVES, Jan., 1905, p. 32).

XVIII.—SYMPATHETIC OPHTHALMIA.

90. **Ruge, Sophus.** Pathologico-anatomical studies regarding sympathetic ophthalmia and its relation to the usual traumatic uveitis. *Arch. f. Ophth.*, lvii., p. 401.

RUGE (90) thus summarizes his results: 1. There are two kinds of intraocular inflammation after traumatism, the acute

purulent inflammation of the vitreous with purulent uveitis, and the primary, chronic, fibroplastic uveitis. (A third form of inflammation clinically observed, the serous uveitis, has not yet been examined pathologico-anatomically.) 2. The inflammation of the first eye which induces sympathetic inflammation of the second is always fibroplastic. There is no evidence that a simple purulent panophthalmitis will induce sympathetic ophthalmia. 3. The inflammation in each of the eyes presents the same pathologico-anatomical picture. 4. A uveitis productive of sympathetic ophthalmia can be distinguished pathologico-anatomically at the most only gradually from a traumatic fibrino-plastic uveitis not productive of sympathetic ophthalmia. 5. Important differences exist between the luic, the tuberculous, and the traumatic fibrinoplastic uveitis, but between the latter and the so-called idiopathic uveitis such a difference cannot always be found. 6. Giant cells are comparatively often found in traumatic uveitis more frequently in sympathetic than in non-sympathetic eyes. 7. Giant cells are found in both the injured and the sympathizing eye. 8. The granulation tissue developed in both eyes can in rare cases perforate the sclera. The perforation occurs along the anterior and posterior ciliary vessels. The frequently observed perivascular lymphangitis is to be considered the first step toward perforation. 9. Giant cells are always found in granulation tissue tending to perforation. 10. No conclusion regarding the prognosis of the sympathizing eye can be drawn from the condition of giant cells in the eye first diseased. 11. The giant cells furnish no explanation as to the etiology of sympathetic ophthalmia. In particular no conclusion can be drawn that tuberculosis is an etiological factor in the production of sympathetic inflammation.

Sections XIX.–XXII. Reviewed by Dr. H. MEYER.

XIX.—RETINA AND FUNCTIONAL DISTURBANCES.

91. **Heine.** Clinical and anatomical study of a hitherto unknown malformation of the eye. Congenital cyst of the retina. *Arch. f. Ophth.*, lviii., p. 38.

92. **Henderson, E. Erskine,** F.R.C.S. Two cases of pigmentation of the retina. *R. L. O. H. Reports*, vol. xv., part 4.

93. **Alleman, L. A. W.** Retinal symptoms of vascular degeneration. *Amer. Med.*, Feb. 20, 1904.

Heine (91) reports two cases of retinal malformation. The most important point regarding them is that the malformation was almost exclusively confined to the part of the inner layer of the secondary optic vesicle which becomes the light-perceiving retina. The vitreous was so small that it was situated in front between the lens and a septum formed from the cystic retinal tissue, which in the ora serrata merged in a retina for the most part rudimentary. The great hollow space between this frontal septum and the retina was occupied by a cyst within the retinal tissue. From the entrance of the optic nerve there extended sagittally through the cyst a cord formed of nerve fibres and rudimentary retina, which contained an artery and a vein of corresponding lumen. Cornea, sclera, and uvea were intact.

Henderson's (92) article contains the pathologico-anatomical description of two cases which presented all the signs of retinitis pigmentosa. Both eyes were enucleated on account of pain, each in absolute glaucoma. The first case occurred in a seventy-two-year-old woman, the other in a twenty-one-year-old man. The ocular condition is accurately described, especially the changes in the retina and choroid. No definite conclusions were drawn in regard to the cause of the changes, but the views of earlier writers are given, some of whom believe that a similar predisposition to vascular disease is fundamental to both glaucoma and retinitis pigmentosa. Devereux Marshall.

XX.—OPTIC NERVE.

94. **Cirincione.** Concretions of the optic disk. *La clinica oculistica*, March, 1904.

95. **Sourdille, G.** Neurogliar tumors of the optic nerve and retina. *Arch. d'opht.*, xxiv., No. 2, p. 87.

Cirincione (94) reports two clinical observations of concretions in the intraocular extremity of the optic nerve, a diagnosis which was confirmed anatomically. In most cases the concretions are in the form of thick, whitish aggregations with more or less irregular outlines, preferably near the terminal trunk of the central vessels in front of the lamina cribrosa. Vision and field are unaffected. The concretions are not the product of hyaline degeneration of any part of the papillary tissue, but a gradual and continuous deposit of hyaline substance between the meshes of the papillary structure, in the form of minute granules, which

unite to form little drops, and finally a thick mass which occupies space and pushes the optic fibres in every direction without changing their structure or function. CIRINCIONE.

The tumor of the optic nerve arising from the neuroglia, described by SOURDILLE (95), consisted of very fine fibrils, some running in juxtaposition, others interlacing, embedded in an albuminoid cement-substance, with nuclei and nucleated cells near the fibres and at the points of interlacing. The second case was one of a tumor arising from the outermost layers of the retina, also composed of very fine fibrils with large round cells in their medullæ, which on the whole nearly approached the common glioma of the retina. The entire retina was thickened by an hypertrophy of the neuroglia. It could be distinguished from the common glioma by its structure and by its prognosis, the same as a fibroma from a sarcoma. The author calls it glioma of adults to distinguish it from the common embryonal form, and is of the opinion that most of the tumors of the optic nerve described as myxosarcomas are gliomas of adults.

V. MITTELSTÄDT.

XXI.—INJURIES, FOREIGN BODIES, PARASITES.

96. **Gonin.** Ocular lesions caused by lightning. *Annales d'ocul.*, cxxxi., p. 81.

97. **Moulton, H.** Small-shot injuries of the eyeball. *Ophth. Record*, March, 1904.

98. **Werner, L.** A case of intraocular echinococcus cyst with brood capsules. *Trans. Ophth. Soc.*, vol. xxiii., p. 193.

GONIN (96) describes two cases in which vision was injured by lightning. In one case there was a monolateral whitening of the disk, with a large central scotoma, ascribed to the blinding action of the light, as the patient was not struck. In the other, the patient was struck. There were bilateral opacity of the cornea, discoloration of the posterior cortical layer of the lens, followed later by opacity of the anterior cortical, and a whitening of both optic papillæ with small retinal vessels. BERGER.

MOULTON (97) presents four cases. In two the shot was imbedded in the sclera, not having perforated. In the others the shot had apparently passed completely through the eyeball. In the latter cases $\frac{20}{40}$, $\frac{15}{100}$, and $\frac{20}{200}$ were the records of vision, going to show that conservative treatment of this class of cases may yield excellent results. ALLING.

WERNER'S (98) case was without doubt one of intraocular echinococcus. Only two other cases have been reported. The author considers Gescheidt's case to be doubtful and Griffith's to be genuine though the cysts were sterile. Werner's patient, a man twenty-eight years old, first lost the upper part of the field and finally became blind, with no perception of light. The iris was atrophic and adherent to the anterior capsule. The lens was clear except for a gray haziness close to its posterior surface. Tension +. No red reflex. The eye was enucleated on account of an intraocular growth. It contained an echinococcus cyst with well developed brood capsules which contained numerous scolices. The cyst was subretinal, but filled the entire globe.

DEVEREUX MARSHALL.

XXII.—OCULAR DISTURBANCES IN GENERAL DISEASES.

99. **Bull, Chas. Stedman.** Arterio-sclerosis and its bearing upon certain lesions of the retina and optic nerve. *Med. Record* and *Annals of Ophth.*, Jan., 1904.

100. **Sisson, E. O.** Rare ocular lesions in scarlatina. *Am. Jour. of Ophth.*, Dec., 1903.

101. **Woodward, J. H.** The ocular complications of mumps. *N. Y. Med. Jour.*, Jan. 2, 1904.

102. **Roch.** A case of respiratory hippus. The influence of the respiration on the movements of the iris. *Revue méd. de la Suisse Romande*, 1003, p. 633.

103. **Onfray, René.** Metastatic ophthalmia complicating a cancer of the œsophagus. *Arch. d'opht.*, xxiv., 2, p. 43.

104. **Nettleship, E.** Observations on renal retinitis. *R. L. O. H. Reports*, vol. xv., part 4.

105. **Elschnig.** The diagnostic and prognostic importance of ocular diseases in nephritis. *Wiener med. Wochenschr.*, Nos. 11 and 12, 1904.

106. **Hinshelwood, James.** The eye symptoms in locomotor ataxy. Report of the Glasgow Medical and Chirurgical Society. *Glasgow Med. Jour.*, Nov., 1903.

107. **Pick, A.** The localizing, diagnostic importance of the so-called hemianopic hallucination, with remarks on bitemporal scintillating scotoma. *Am. Jour. Med. Sci.*, Jan., 1904.

108. **Krüger, K.** The symptoms observed in diseases of the temporal and frontal lobes, with special reference to the eye symptoms. *Zeitschr. f. Augenheilk.*, xi., 1, p. 14.

109. **Hinshelwood, James.** Ocular and other forms of chronic headache. *Glasgow Med. Jour.*, Jan., 1904.

110. **Enslin.** The ocular changes in oxycephaly, especially those of the optic nerve. *Arch. f. Ophth.*, lviii., p. 151.

111. **Vaquez, H.** Hypertension (pathogeny of saturnine, uræmic, and eclamptic amaurosis). *La Tribune méd.*, 1904, p. 85.

112. **Hansell, H. F.** Hallucinations of vision. *Amer. Medicine*, Jan. 16, 1904.

Bull (99) gives a very good review of the many changes due to arterio-sclerosis. Alling.

Sisson (100) mentions uræmic amaurosis, purulent inflammation of the vitreous, phlegmon of the orbit, or thrombosis of the cavernous sinus among the rarer lesions known to accompany scarlatina. Alling.

Woodward (101) describes a case of monolateral optic neuritis following mumps.

Roch (102) observed in a case of aneurysm of the aorta rhythmic movements of the iris synchronons with the respiratory movements (mydriasis on inspiration, myosis during expiration). Autopsy showed mediastinal adhesions between the aneurysm and the pleura, and pericarditic adhesions between the heart and the pericardium. In consequence of these adhesions there was an anæmia of the iris during inspiration, replaced during expiration by a passive hyperæmia. Berger.

Onfray (103) observed a metastatic panophthalmitis in a cachectic man suffering from cancer of the œsophagus. As there were no signs of a general infection, it was probably caused by an isolated septic embolus detached from a thrombus in the veins of the œsophagus or mediastinum, which communicated with the veins of the lung. The infection probably came from the ulcerated surface of the carcinoma, as the patient, who received his nourishment through a gastric fistula, would force this from his mouth. The presence of an anaërobic bacillus in the pus, which otherwise contained only streptococci, favored this origin.
v. Mittlestädt.

Nettleship's (104) paper was a report to the meeting of the British Medical Association at Swansea in 1903, and is published in the *Transactions* of the Association.
Devereux Marshall.

Elschnig (105) bases his work on the observation of two hundred cases of nephritis, while other observers have usually studied only the cases which came under ophthalmic treatment. He found 74 patients with normal retinæ, 60 with arterio-sclerosis alone or with slight œdema of the retina, 15 with slight,

atypical retinitis, 13 with typical albuminuric retinitis, 6 with albuminuric retino-choroiditis, and 7 with other retinal troubles induced by the nephritis. The high percentage of pathological conditions of the fundus, Elschnig ascribes to his careful examination of the vascular system. No condition is characteristic of a special form of nephritis, and nephritis cannot be excluded by the ophthalmoscopic condition. The predisposition to retinal disease increases with advancing age. The pathological condition of the retina corresponds exactly with the general condition so far as it remains stationary or advances. Among the patients were 65 with a mortality of 16 within six weeks, or 17 within six months, 26 %. The mortality of renal cases without retinal disturbance was markedly less, 7.7 %. These figures show the prognostic importance of retinitis in nephritis, especially as the percentage of mortality also corresponded to the intensity of the retinal disease.

Hinshelwood's (106) patient, who was exhibited before the Society, suffered from locomotor ataxia and had optic atrophy, Argyll-Robertson's pupillary phenomenon, peripheral contraction of the visual fields, unequal pupils, and ptosis.

Devereux Marshall.

It was formerly held that scintillating scotomata and hallucinations in the hemianopic visual field point to a lesion in the occipital cortex. Jolly, Uhthoff, and others have shown that this phenomenon can have its origin in the primary optic tract. Pick (107) brings additional evidence in favor of this theory by four cases of hallucination in hemianopic fields in which, although not confirmed by autopsy, associated symptoms pointed toward the situation of the lesion in the optic tract. A case of bitemporal hemianopic scintillating scotoma, the nature of which he considered functional, furnished still more evidence in favor of this theory.

Alling.

Krüger (108) comes to the conclusion that in disease of the frontal bone disturbances of speech, psychic changes, and frontal ataxia form the direct focal symptoms. The conjugate deviation of the eyes and of the head are of localizing diagnostic value. In eleven cases the deviation was toward, in five cases from, the diseased side of the brain. According to Landovsky, this symptom is sometimes one of paralysis, sometimes of irritation. Fundus changes are choked disc, optic neuritis, optic atrophy with the accompanying loss of function, the general consequence of

cerebral pressure. Choked disk does not appear as an early symptom, and when present in different degrees it can indicate with certainty the diseased side. Pupillary disturbances have no real importance, they are caused by the affection of the optic nerve. Nystagmus is due to the simultaneous interference with the maintenance of the bodily equipoise. Hemianopsia is not a pathognomonic sign. The disturbances of the nerves which supply the eye muscles and of the facial form no guide.

Hinshelwood (109) describes the ocular conditions which give rise to headache and prescribes the treatment.

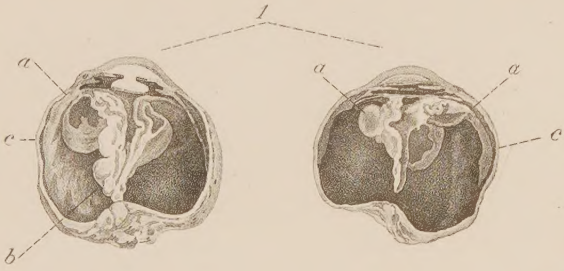
Devereux Marshall.

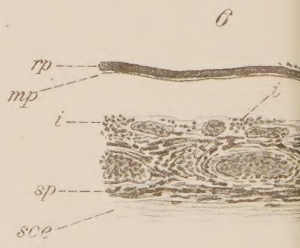
Enslin (110) adds to the twenty-six reported cases of oxycephaly, sixteen observed by himself. A post-neuritic optic atrophy frequently occurs, the cause of which has been variously surmised. The vision is usually better than would be expected after a view of the fundus. The author reaches the following conclusions: Oxycephaly is a form of the skull, caused by the premature ossification of the coronary suture, which exhibits a height of development relatively surpassing the local average, while length and breadth are adjusted to the local mass. The highest place on the skull lies nearer the middle than normal. Such a skull is to be pronounced pathological in the anatomical, but not always in the nosological, sense.

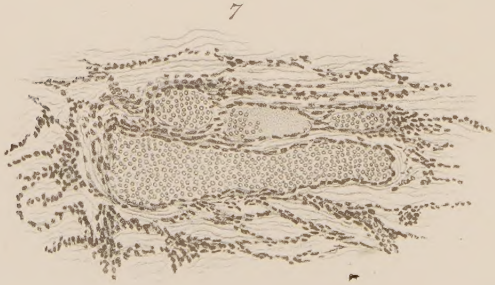
Vaquez (111) explains the amaurosis of lead and uræmic poisoning, as well as of eclampsia, by an increase in the blood pressure. In several cases he saw hypertension precede amaurosis and recover soon after the latter had disappeared. In one case in which visual disturbances appeared simultaneously with hypertension, Terrien could demonstrate hypertony of the eye and choked disk. The symptoms accompanying the other above-mentioned forms of amaurosis, such as transitory disturbances of speech, convulsions, maniacal conditions, the author refers to hypertension. The latter may be due to contraction of the smaller arteries, which is again the consequence of an increased secretion of the suprarenal capsules. Berger.

Hansell (112) enucleated both eyes of a woman, twenty-five, who had been born blind. She developed delusional insanity and complained especially of a constant red glare. She had been in the hospital for two months without relief. A few hours after the operation the mental condition became normal.

Alling.







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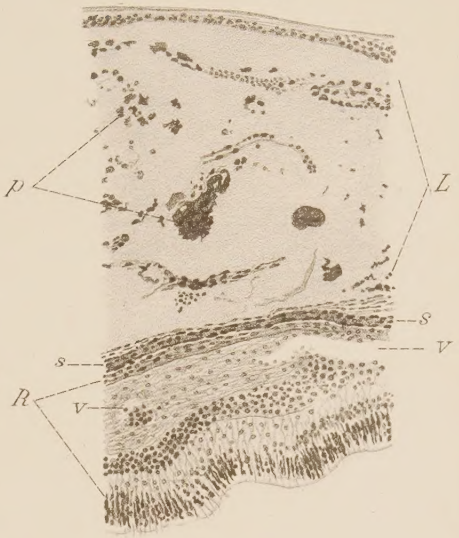

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